

# RECOGNITION

JOURNAL



U. S. DESTROYER

~~RESTRICTED~~

MAY, 1944

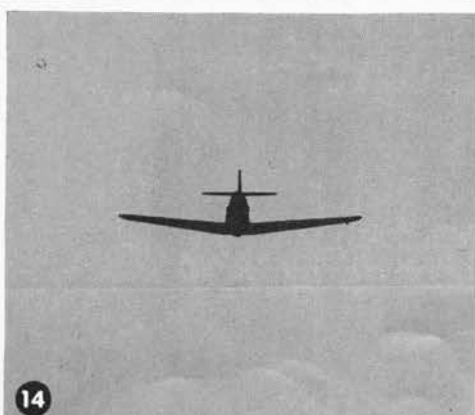
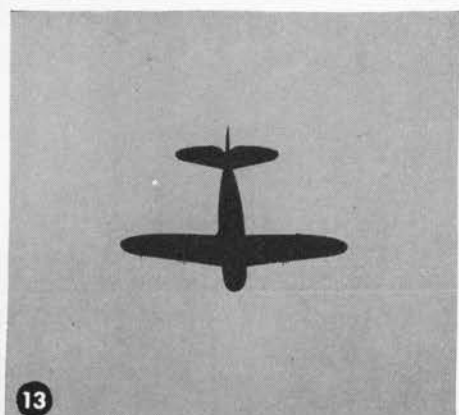
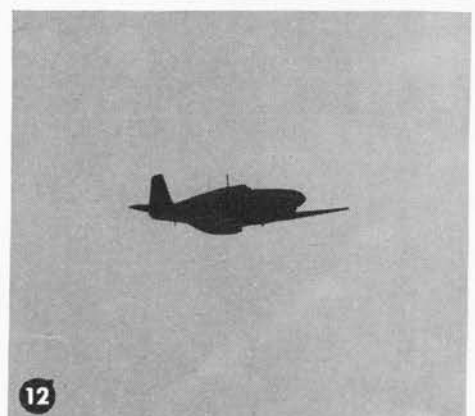
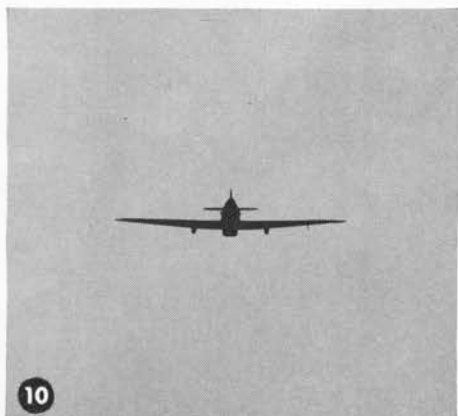
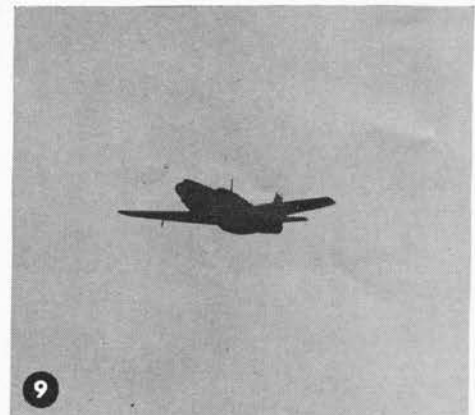
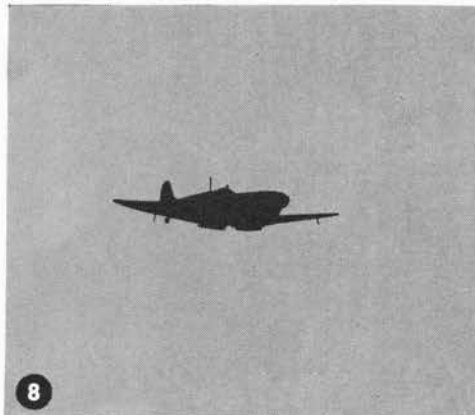
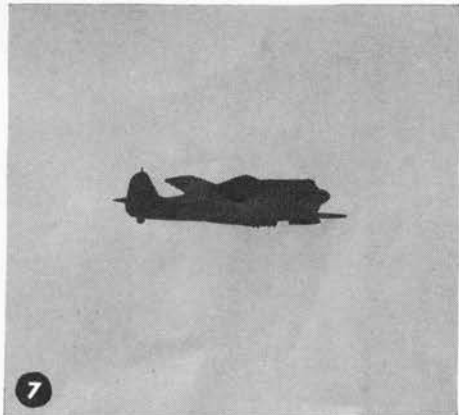
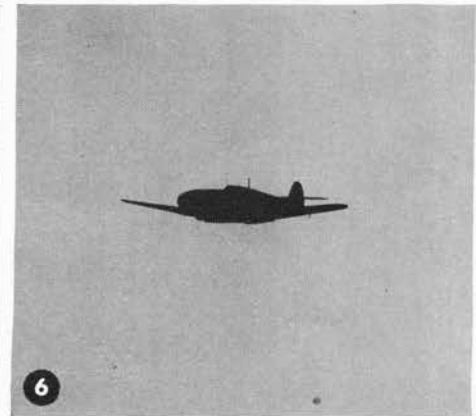
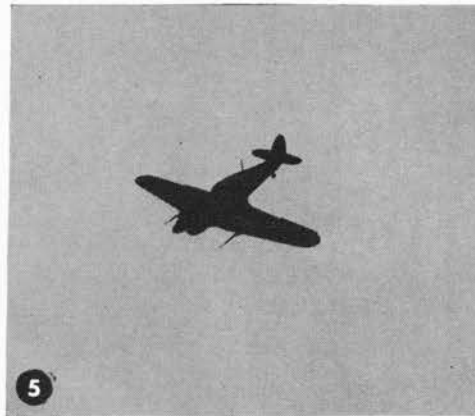
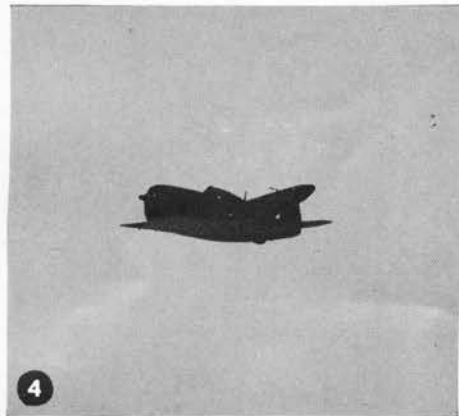
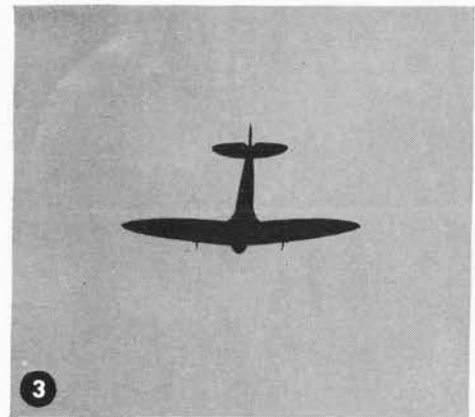
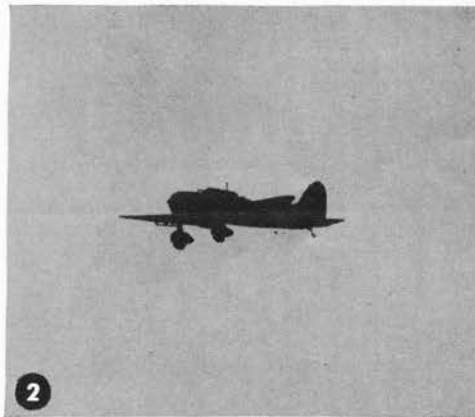
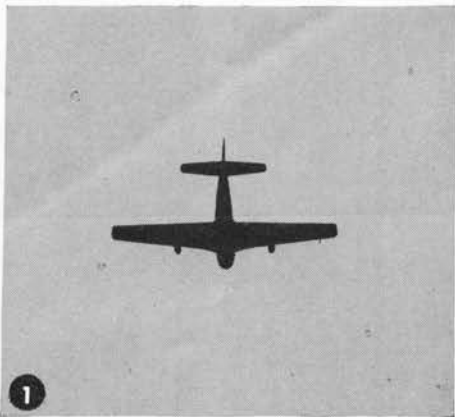
NUMBER 9

WAR DEPT.  
NAVY DEPT.





# QUIZ NO. 1: FIGHTERS & DIVEBOMBERS





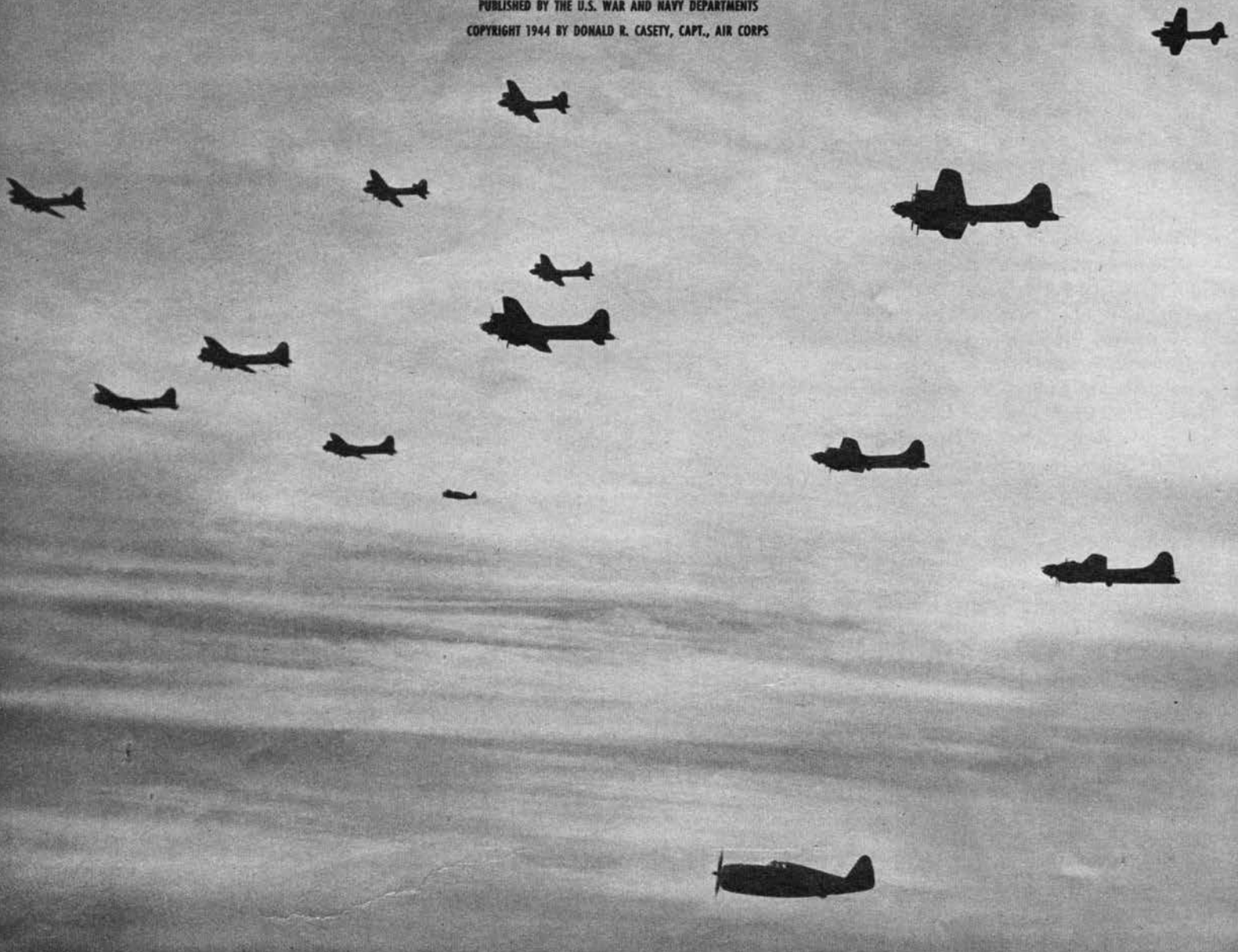
# RECOGNITION

## JOURNAL

MAY, 1944

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FRIENDLY THUNDERBOLTS MINGLE WITH FLYING FORTRESSES AS A FORMATION OF U. S. BOMBERS WINGS ITS WAY TOWARD TARGETS IN INDUSTRIAL GERMANY

# FAIR WARNING

**R**ecognition is never easy. In the heat of battle it is exceedingly tough. All combatants—pilots, aerial gunners and antiaircraft gunners—have a grave responsibility. They must know, with the split-second sureness which comes only with thorough acquaintanceship, who is friend and who is foe. And they must destroy only the foe.

But this is just half the problem. Every pilot and every ship skipper must make equally sure that he himself is not mistaken for an enemy. There is little profit in withholding your fire because you recognize an approaching plane as friendly, and then being shot up yourself because the approaching plane thinks you are enemy. It just doesn't add up.

There are hundreds of lives at stake aboard a surface ship or shore base, while only one life is at stake in a fighter plane. This fact must influence the commander's decisions. He can take no

chances. If there is any failure of ordinary recognition, the plane may be considered an enemy and shot down by the ship or base.

However, there are things the pilot can do. Just as every city has traffic rules, every combat area and every individual combat action has its proper identification signals. Every pilot, every day, has certain definite ways of identifying himself to Allied commanders he approaches. If these are observed, "mistakes" costing Allied lives can be lessened. Even apart from this, there is the matter of simple common sense. Any pilot who comes zooming out of the sun may go zooming home in a box. Any pilot who makes dummy runs on a flight of bombers may learn forcibly that a bomber carries guns as well as bombs.

It is simple courtesy to know your friends, but part of saving your own skin to keep them alive. Shooting them down is a tragic waste of the most valuable war matériel—trained fighting men.



# RAF RELEASES SPITFIRE XII

Latest announced model of a famous series is the Spitfire XII. The first Spit to be powered with an engine other than the Rolls-Royce Merlin, it is different enough in appearance from its predecessors to constitute a problem in recognition.

The new engine is the Rolls-Royce Griffon. Its incorporation has given the Spitfire a longer, heavier nose with an unusually large spinner. In other respects the Spitfire XII retains features of earlier marks. It has a wing like the Clipped V, the pointed rudder and curving fin of the IX. The armament is now as heavy as that of the Typhoon IB, consists of four 20-mm. cannon.

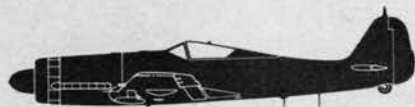
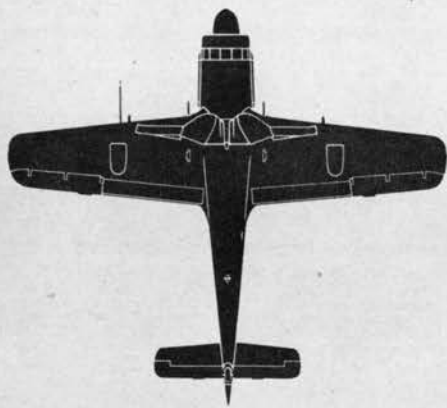


FLYING PHOTOGRAPHS OF SPITFIRE XII SHOW ITS CLIPPED WING, POINTED RUDDER AND LONG NOSE



WITH ITS INCREASED POWER AND HEAVY CANNON ARMAMENT, THE NEW SPITFIRE SHOULD BE MORE THAN A MATCH FOR ITS GERMAN COUNTERPART, THE FW190

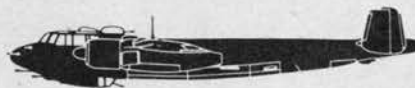
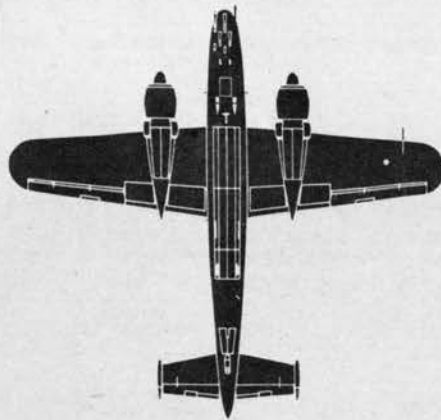




**FW-190**

SPAN 34 FT. 6 IN.  
LENGTH 32 FT.

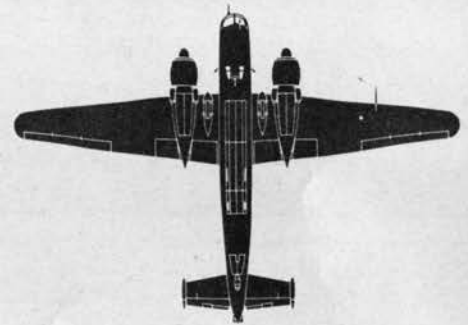
NEW INLINE ENGINE MODEL (PROVISIONAL)



**DO-217J**

SPAN 62 FT. 5 IN.  
LENGTH 58 FT.

NIGHTFIGHTER TYPE HEAVILY-ARMED IN NOSE



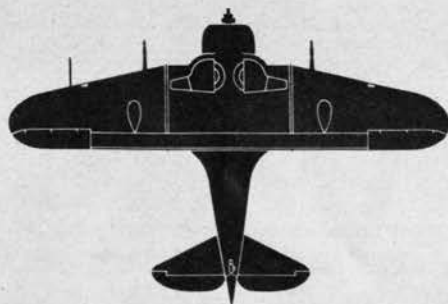
**DO-217K**

SPAN 80 FT. 6 IN.  
LENGTH 56 FT. 6 IN.

THIS VERSION IS IN SERIES PRODUCTION

## SILHOUETTES OF NEW AIRCRAFT

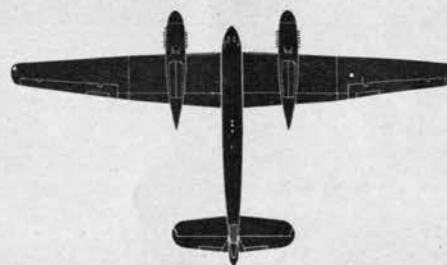
The Luftwaffe continues its policy of improvisation on old standbys with the three new variations shown above. The Allied types below are new airplanes, although the Tempest V, with Napier Sabre power plant, shows Typhoon ancestry in spite of a redesigned tail, longer nose, and somewhat elliptical wing. The Welkin is a descendant of the Whirlwind. Of special interest is the longer nose on the Focke-Wulf 190, which houses an inline engine in the unusual cowling also found on the Ju-88.



**BOOMERANG**

SPAN 36 FT. 3 IN.  
LENGTH 25 FT. 6 IN.

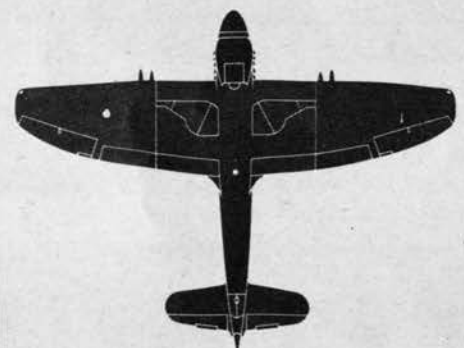
AUSTRALIAN-BUILT SINGLE-SEAT FIGHTER



**WELKIN I**

SPAN 70 FT. 4 IN.  
LENGTH 41 FT. 6 IN.

WESTLAND TWIN-ENGINE NIGHTFIGHTER



**TEMPEST V**

SPAN 41 FT.  
LENGTH 33 FT. 8 IN.

MOST RECENT FIGHTER IN HAWKER SERIES





WHITE PHOSPHOROUS BOMBS SPLASH FIRE AS THEY BURST OVER LAKUNAI AIRFIELD AT RABAUL, ONE OF THE MOST THOROUGHLY BOMBED-OUT BASES IN THE SOUTH PACIFIC. THE BIG TWIN-ENGINE PLANES ARE BETTYS WHILE THE SMALL ONE WITH THE WINGTIPS FOLDED UP IS ZEKE. FIRST ZEKE'S WINGTIPS COULD NOT BE FOLDED

# JAPANESE AIR FORCE

In its first issue, the *Journal* showed the make-up of Japanese air power. Now, eight months later, it is time to take another look, to bring the picture up to date by integrating the new models with the older types which still make up the bulk of the Japanese air forces.

In the aerial war in the South Pacific, the Japanese have been taking a terrific beating. But it is doubtful whether Allied air superiority can be maintained as offensives sweep farther north and west from our Central Pacific bases, extending a hard-to-hold supply line. Unlike the Germans, the Japanese have not had their factories blasted, and their output of warplanes may still be increasing.

Whatever Japan's present weakness in the air may reflect—poorer pilot material, low morale or overwhelming U.S. strength—it is certainly not being caused by a lack of new models. Five

new types, Helen, Tojo, Judy, Jill and Nick, have been positively identified since last September, while a sixth, the four-engine bomber Liz, is known to exist. Exact comparisons with the USAAF, U.S. Navy, RAF and the Luftwaffe are impossible, but certainly no power has outdone Japan in new designs.

Of the aforementioned newcomers, Tojo is apparently the most dangerous. When first seen, it was spotted as resembling the P-47. An earlier Japanese fighter, Dick, identical with the Seversky P-35, later the AT-12, marked the first Jap use of a Republic design. With a 1,450-hp. engine, most powerful used by the Japanese, Tojo dives and climbs at great speed. In fact a P-47 pilot once had to open his throttle all the way to close with a Tojo in a dive.

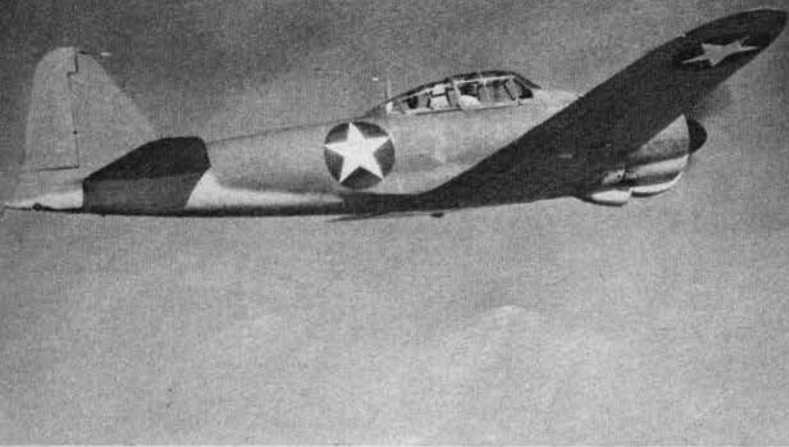
Although introducing new planes in considerable quantity, the

Japanese have so far been slow in retiring their old ones. Of those described in the September *Journal*, only two—Nate and Dave—are no longer first line. There has, however, been considerable re-fitting of older types. Such changes have not, for the most part, affected appearance, although they have improved performance.

As far as can be seen, the Japs have produced nothing startlingly new in design, nor have they revealed any trends in favoring one type of fighter or bomber. In Navy planes, progress in fuel-tank protection has been made, while armor is neglected. The Army, on the other hand, has been increasing armor while failing at fuel-tank protection. The emphasis appears to be on speed, maneuverability and firepower. On the following twelve pages are shown those Japanese planes definitely known to be operational.



## ZEKE



**Zeke** is still one of the most important Japanese fighters. It operates from carriers as well as land bases. The air scoop on the Mark II is set above the engine, does not break cowling line.



**Zeke's clean lines** are broken by typically Japanese cockpit canopy. Recognitionally identical with Mark I, Mark II has a more powerful engine which has improved its performance. In dogfights Zeke has been mistaken for P-40.

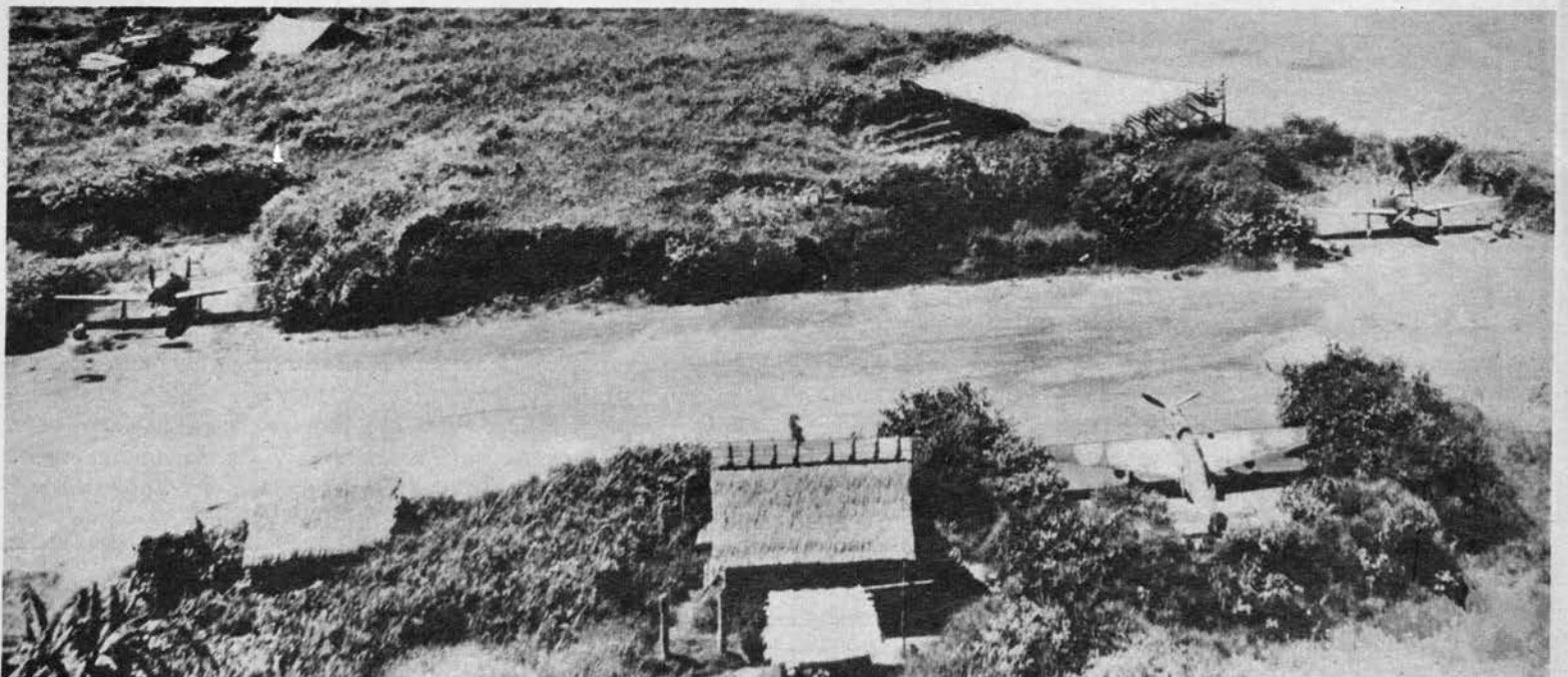
## TONY



**Grounded Tonys** show inline engine, humped fuselage, features it has in common with Hurricane (see *Journal, December*). Cannon can be mounted in prop hub, but mechanical difficulty has prevented use.



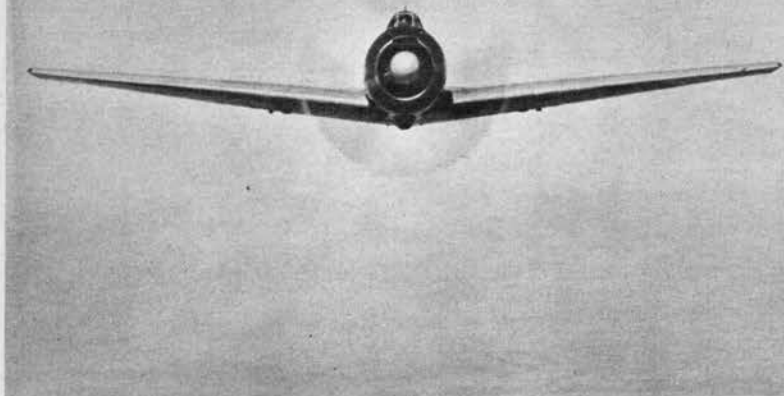
**Inline engine** makes Tony unique among Japanese fighters. When it first appeared, it was mistaken for Mike, Japanese-operated Me-109. In contrast to Zeke's (above), its low cockpit canopy fits into the fuselage.



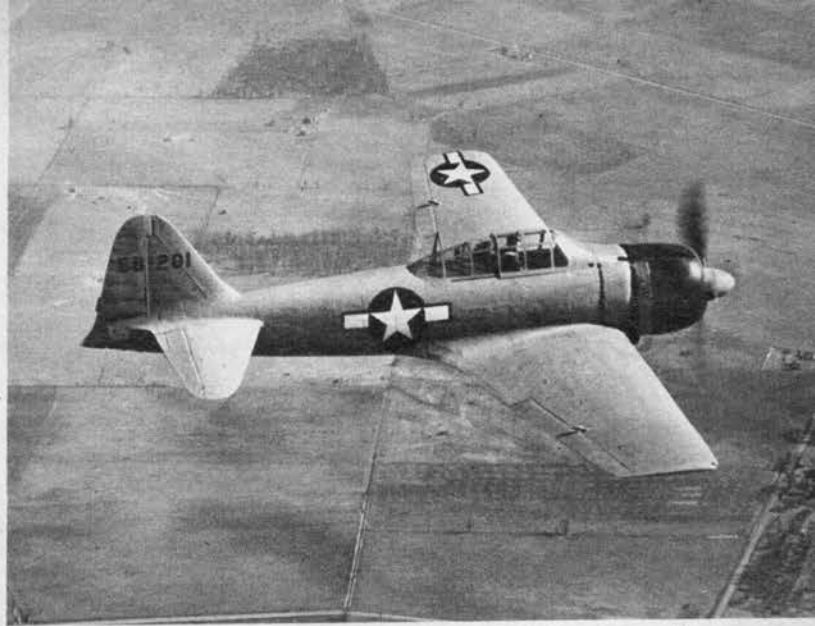
**Raid on Rabaul** brought this picture of Tonys at Vunakanau airfield. Tony can make 370 m.p.h. in level flight. Faster than Zeke or Hamp, it seems less maneuverable. Armament consists of two 12.7-mm. ma-

chine guns firing through propeller and two 7.7's in wings. Recently Tony was found with German MG 151, 20-mm. cannon in place of 7.7-mm. wing guns. Cannon protrude about 18 in. forward of leading edge.

## HAMP



**Hamp head-on** resembles Zeke (*left*), only important recognition difference being clipped wings, giving span 3 ft. less than Zeke's. Hamp is faster plane than Zeke and has better rate of climb. It can out-turn most Allied fighters.

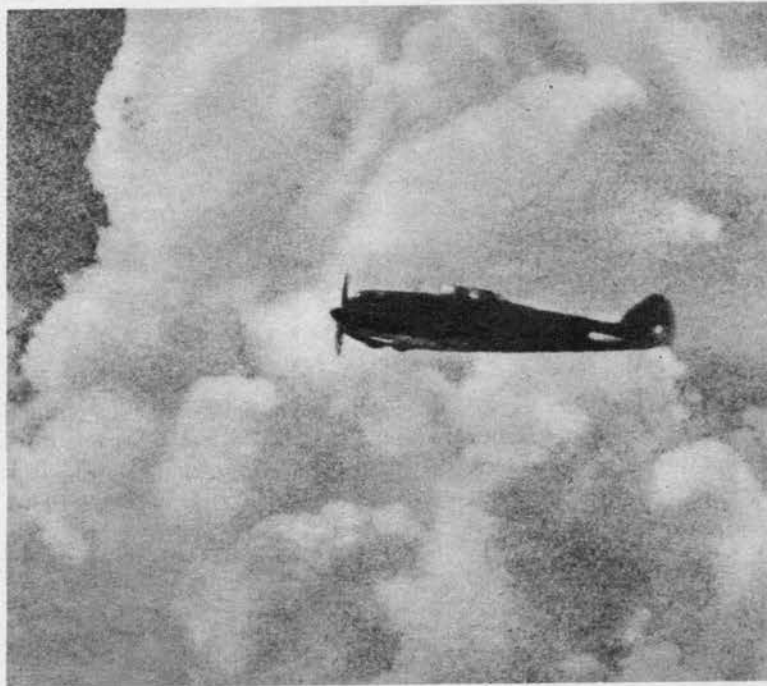


**Captured Hamp** has been tested at Wright Field. Fuselage and armament are same as Zeke's. Latter consists of two 7.7-mm. machine guns in cowling and one 20-mm. cannon in each wing.

## TOJO



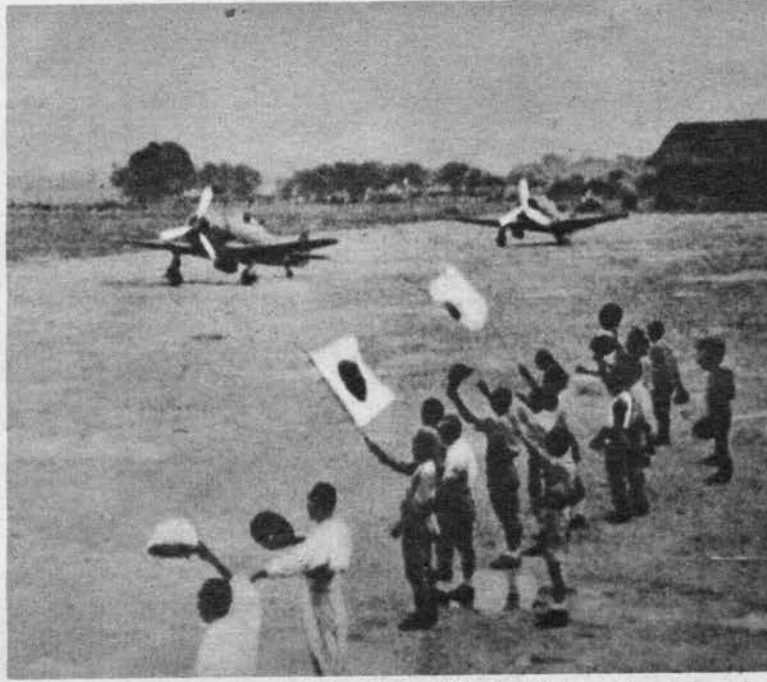
**Elliptical wing**, stubby fuselage, heavy cowling are Tojo's outstanding recognition features. Cowling is broken by air scoop and two machine-gun blasts. Illusion of inverted gull wing is due to large fillets.



**Latest Japanese fighter**, Tojo is "hottest," with estimated top speed above 370 m.p.h. in level flight. Tojo has high climbing, diving speed (*see p. 7*), carries 7.7-mm. machine guns in its fuselage, 12.7's in wing.



**Blister-type greenhouse** is revived on Tojo despite use of faired one on Tony. The pilot's seat is nearly even with wing's trailing edge. Big engine (1,450 hp.), short fuselage (29 ft. 2½ in.) makes it compact.



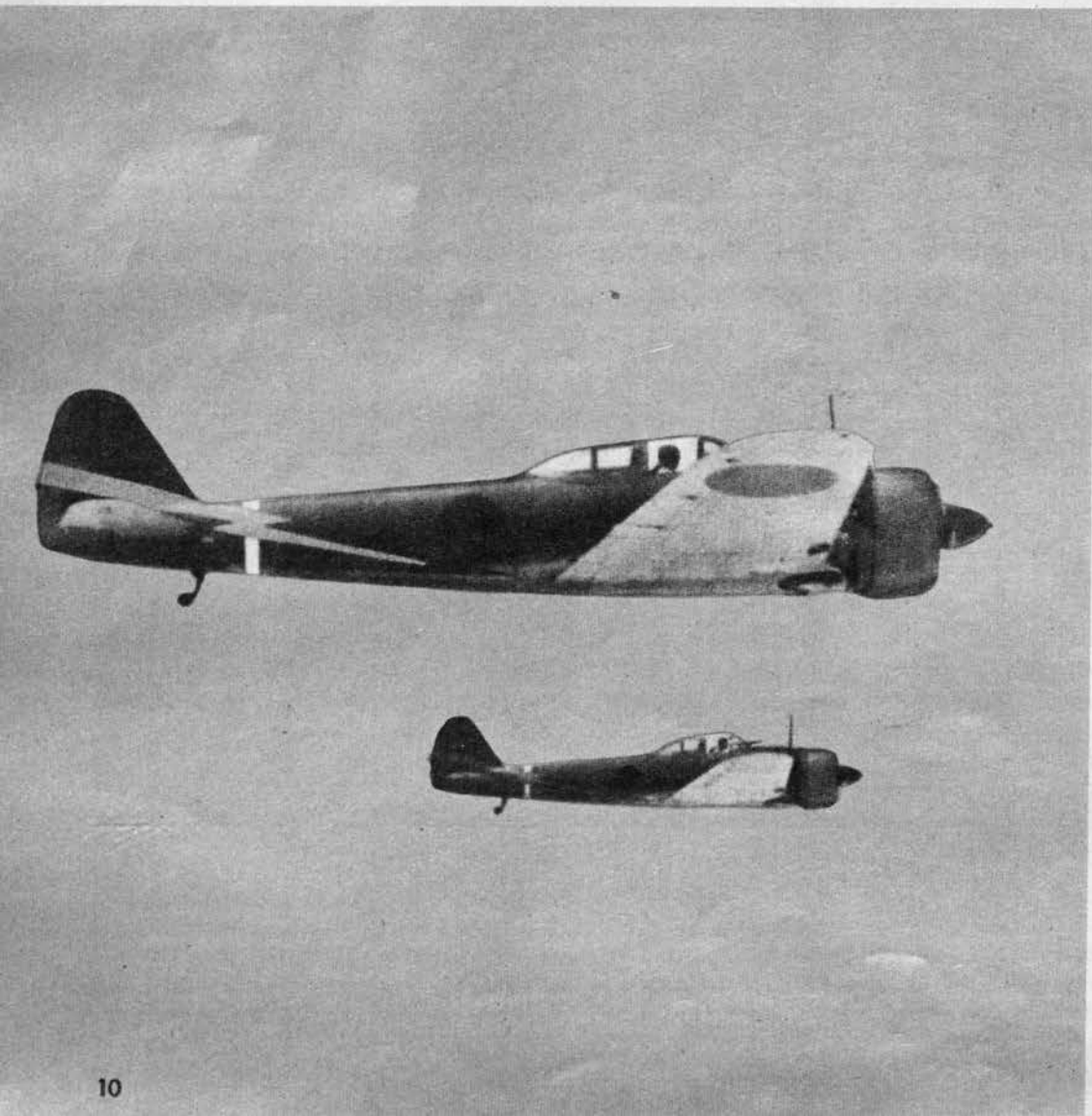
**Tojo** is a small plane, span being but 31 ft., 5½ ft. less than Hamp's. Like other Japanese fighters, Tojo appears to lack effective armor and self-sealing fuel tanks. It has been found to explode readily when hit.



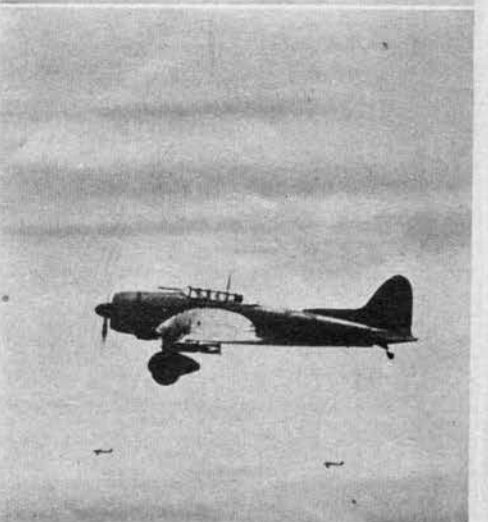
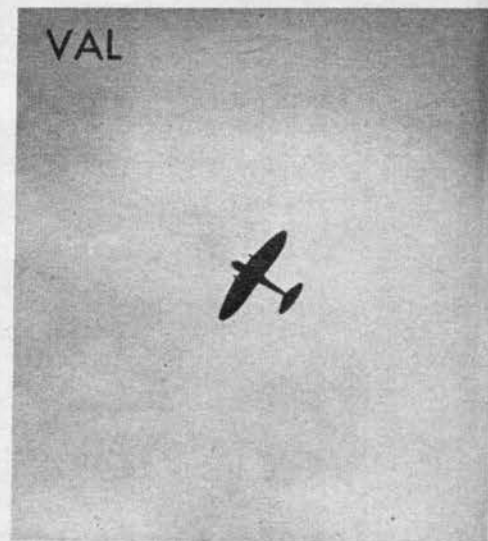
# OSCAR



**Short nose** on Oscar (*above and below*) is its most striking recognition feature. Fuselage by contrast seems long and slender as wing is set far forward. Oscar is an Army fighter, used mainly in the Burma-India theater. The Mark II has a new engine, span 2 ft. less and blunter wingtips.



# VAL

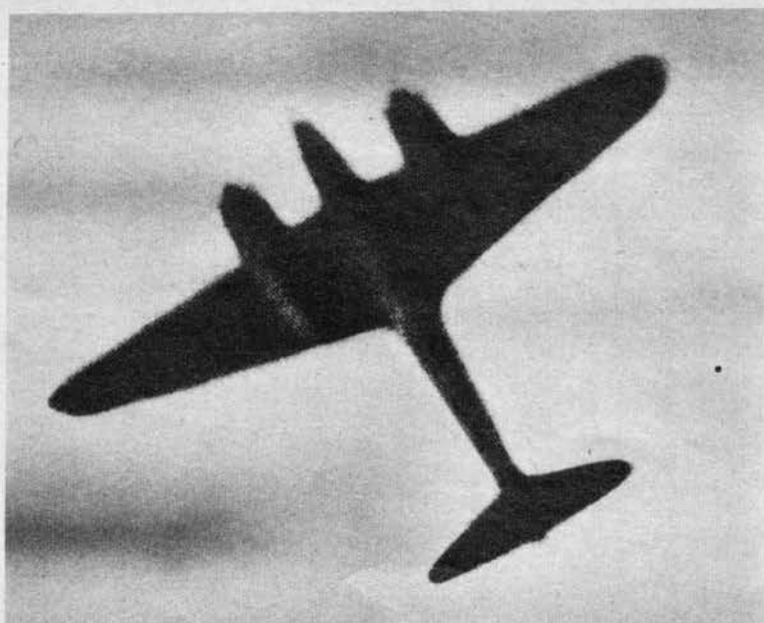


**Divebomber Val** can be identified by fixed landing gear and large fin extending forward. Compare pointed tail with Zeke's and Kate's.

## NICK



**Speedy fighter** Nick is almost as maneuverable as the single-seaters. Identification was late owing to resemblance to Dinah (*below*). Nick does not have Dinah's distinctive fin, while greenhouse is blister type.



**Nick's engines** are underslung. Long, deep fuselage tapers to tail cone. The forward armament is heavy with two 12.7-mm. MG and one 20- or 37-mm. cannon; rear armament varies. Nick may be used as nightfighter.

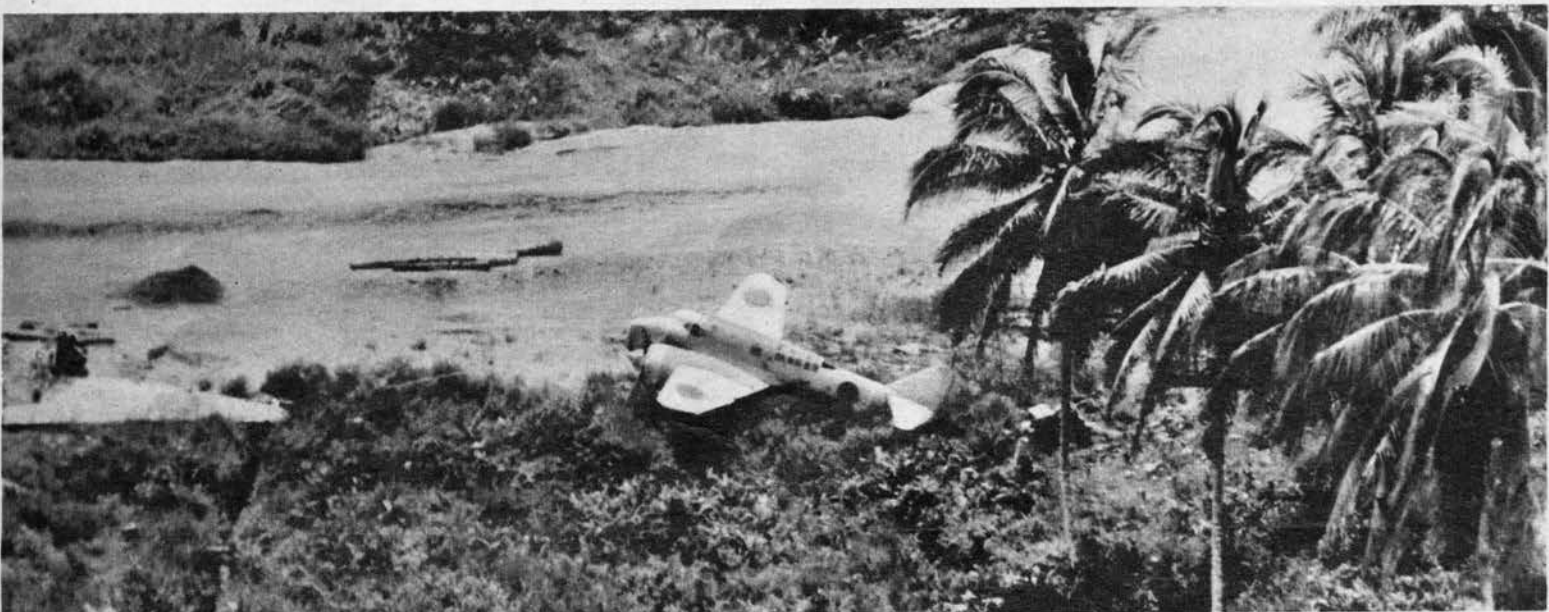
## DINAH



**Dinah** is an Army photo-recon plane, first encountered in China and Burma, more recently seen in South and Southwest Pacific as well. Fighter version with cannon, machine guns forward has been reported.



**Twin-engine** low-wing plane, Dinah has a very slender fuselage. Nose projects about 2 ft. ahead of nacelles. Outstanding recognition feature is the fin with long slanting leading edge, nearly vertical trailing edge.



**Distinctive wing** with raked tips and a sharply tapered trailing edge stands out in this unusually clear picture of Dinah. Note how greenhouse fits into the fuselage with very little blister effect. Because of

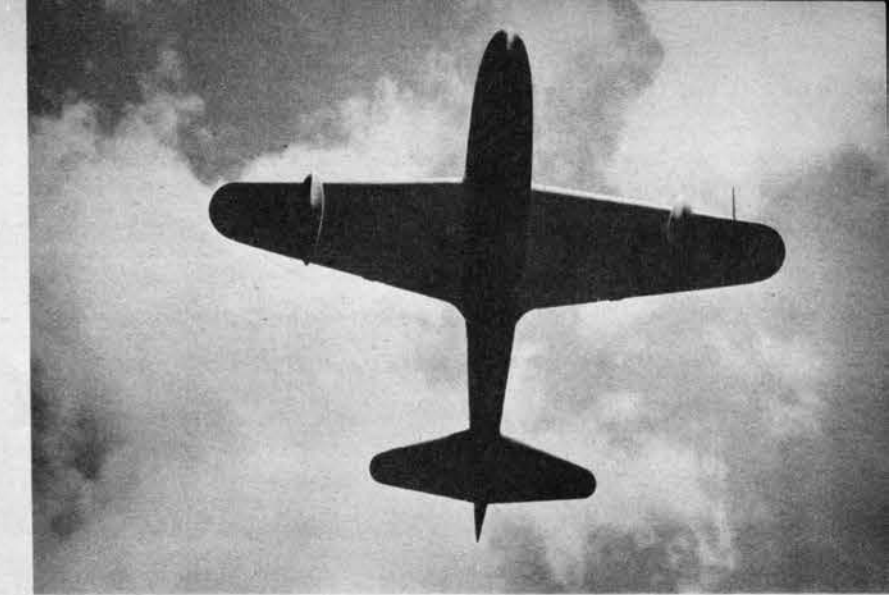
its primary function as a reconnaissance plane, Dinah is produced in fewer numbers than bombers and fighters, is seen much less frequently. Wing at left belongs to a Sally completely shattered by U.S. airmen.



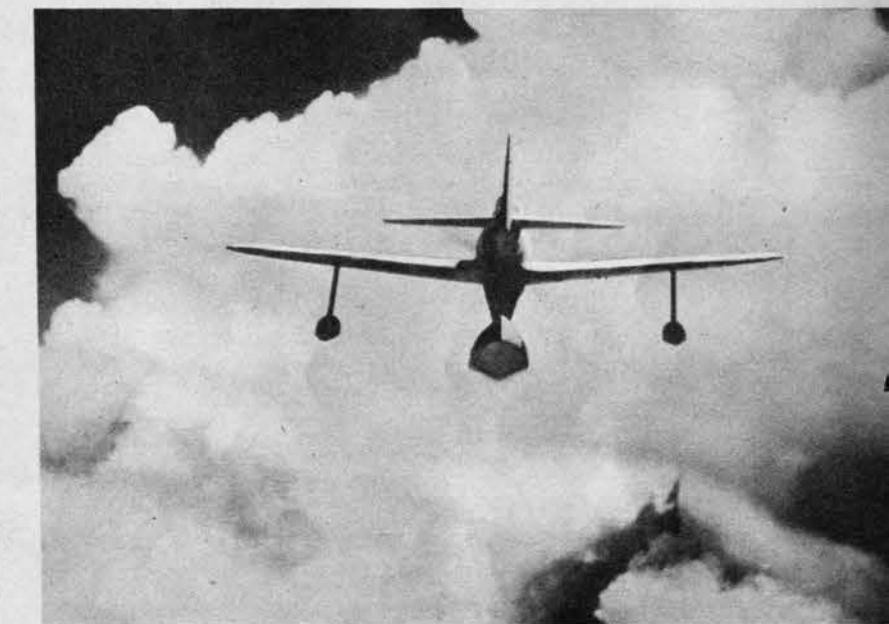


Rufes on Attu are shown clearly in this AAF photograph taken over Holtz Bay. Rufe is simply Zeke (p. 8) on a single float, with only the tail showing any difference. Unlike Zeke's, Rufe's tail cone does not

come to a sharp point. Rufe carries Zeke's armament but naturally does not have former's speed or maneuverability. It does, however, have remarkable combat characteristics for a floatplane, having attacked U.S.



Long float when seen from below may give Rufe appearance of fighter with inline engine, particularly if wing floats are obscured. As a high-performance fighter on floats, Rufe is unique among major air forces.

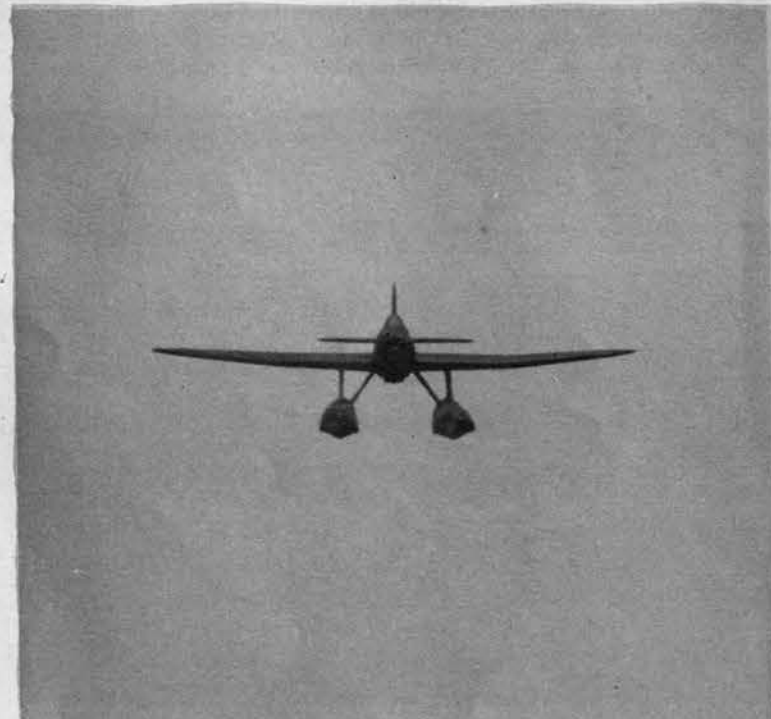


Three floats stand out clearly on Rufe as observed from the rear. By using cleanly designed braces, avoiding maze of struts, Japanese have kept high degree of speed, maneuverability and rate of climb in Rufe.

JAKE



Jake has twin floats, is used mainly for reconnaissance but has attacked Allied shipping with light bombload. Elliptical wing and tail-plane at first confused observers who believed Jake was Val on floats.



Jake's dihedral is very slight, present only on outboard panels. Prominent greenhouse encloses crew of three—consisting of pilot, observer and radio operator. High fin and rudder resembles fingernail in shape

PETE



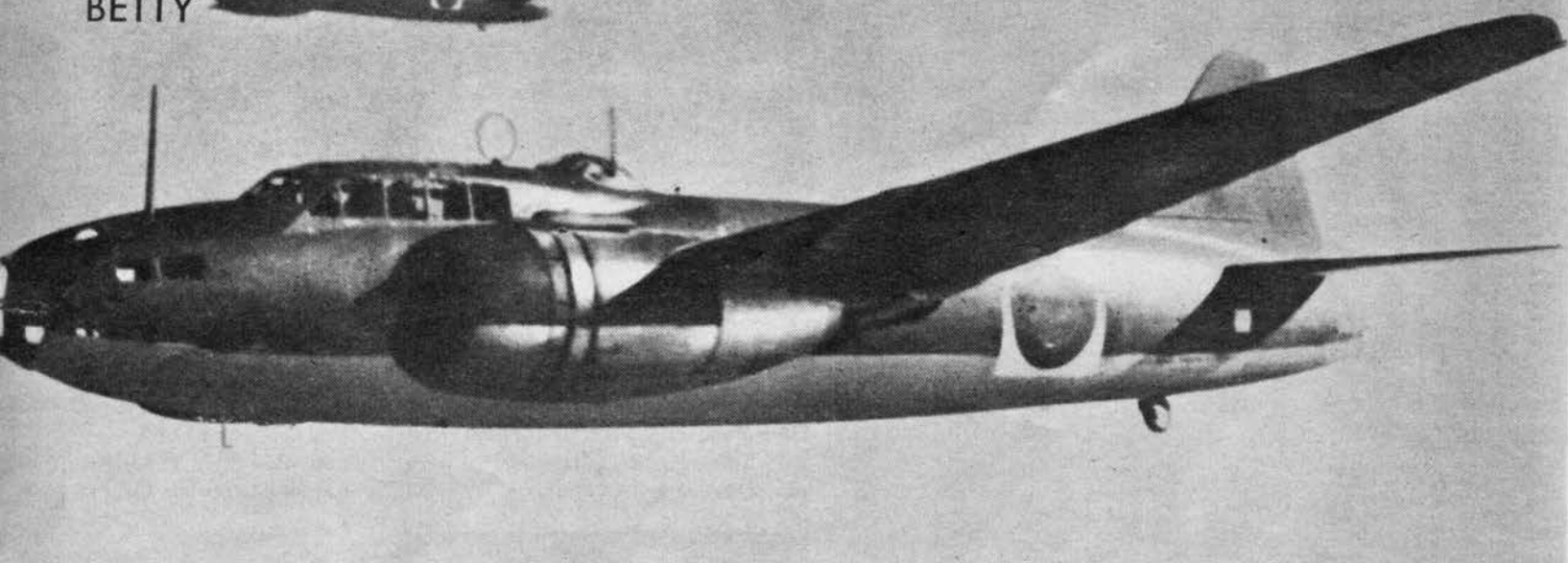
Pete is single-engine, single-float biplane used for short-range reconnaissance as is U.S. Navy's OS2U. Like OS2U, Pete operates from warships. It can carry two 220-lb. bombs and has engaged U.S. fighters.



Staggered wings and wingtip floats help to identify Pete. Armament consists of two fixed 7.7-mm. machine guns firing forward and single flexible 7.7 in rear cockpit. Pete replaced an earlier float biplane, Dave.



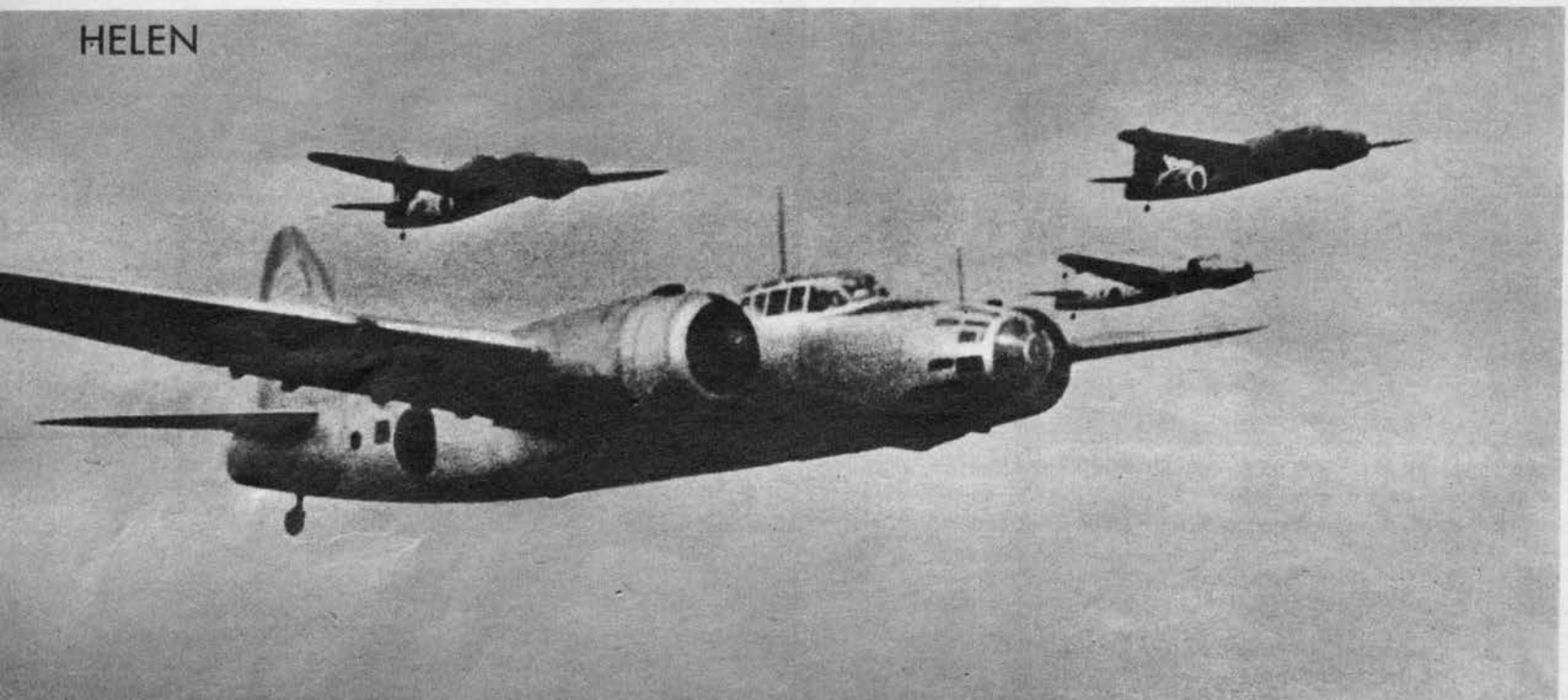
## BETTY



**Japanese Navy's workhorse,** Betty is one of most versatile planes in the South Pacific. It is used as a glide, horizontal and torpedo bomber, photo-recon plane, occasionally as a transport. Recognition features

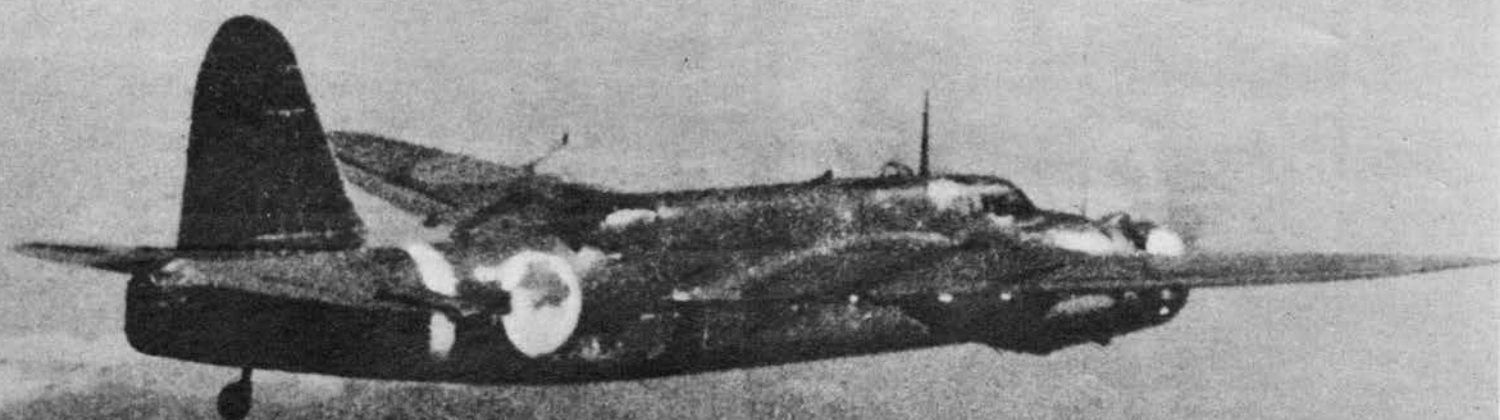
are fat fuselage, tail cone protruding beyond high triangular fin and rudder, pronounced taper on leading and trailing edges of 82-ft. wing. On recent Bettys, 20-mm. tailgun has increased arc of fire.

## HELEN



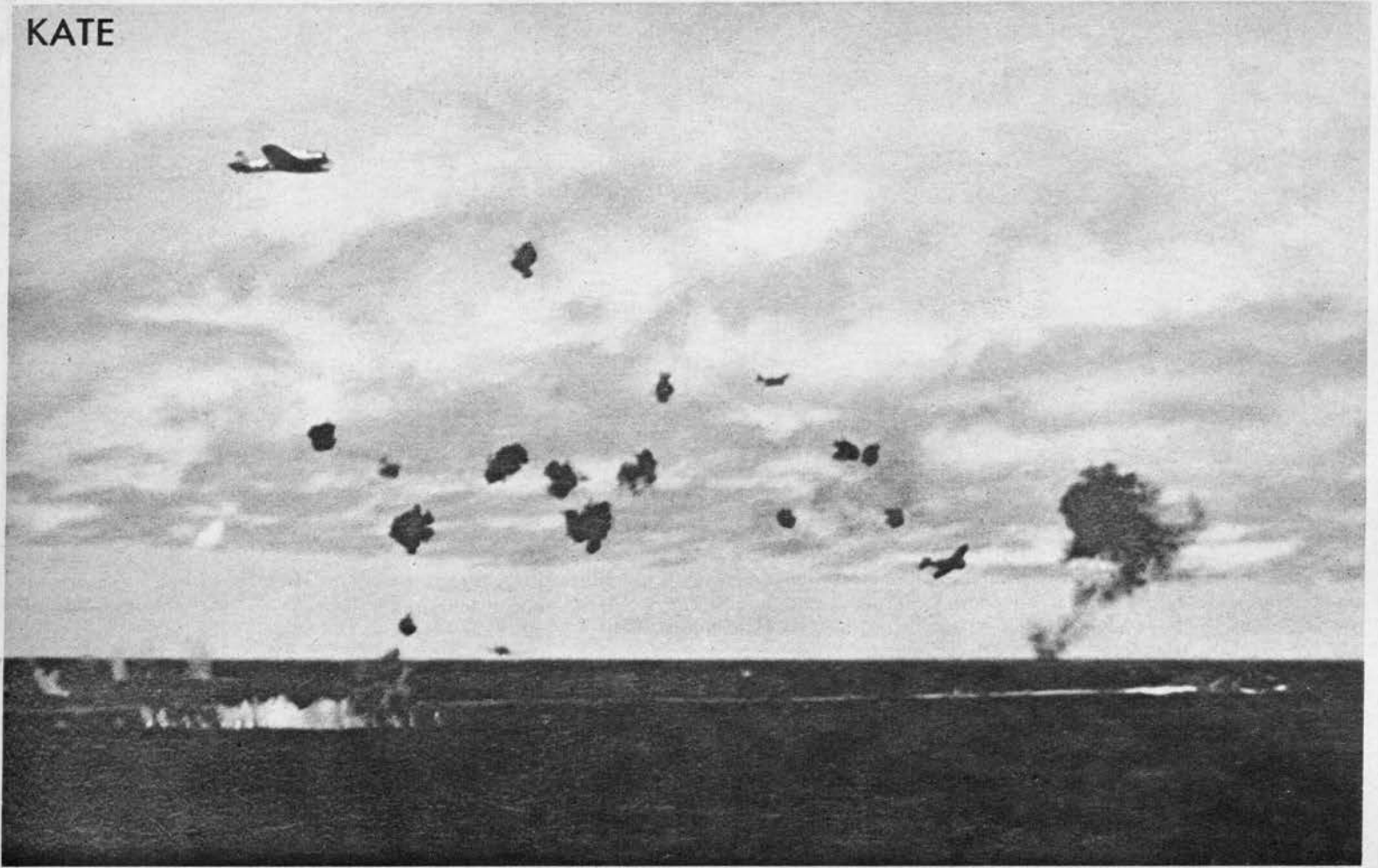
**New Army bomber,** Helen (*above and below*) was identified last summer, is now operational in all Pacific theaters. Helen has unusual wing and cockpit canopy extending aft of wing's broken trailing edge. Lead-

ing edge is also broken, with the center section forward of outboard panels. Armament consists of 7.7-mm. machine guns in nose and tail, possibly in side and belly positions. Top turret has 20-mm. cannon.





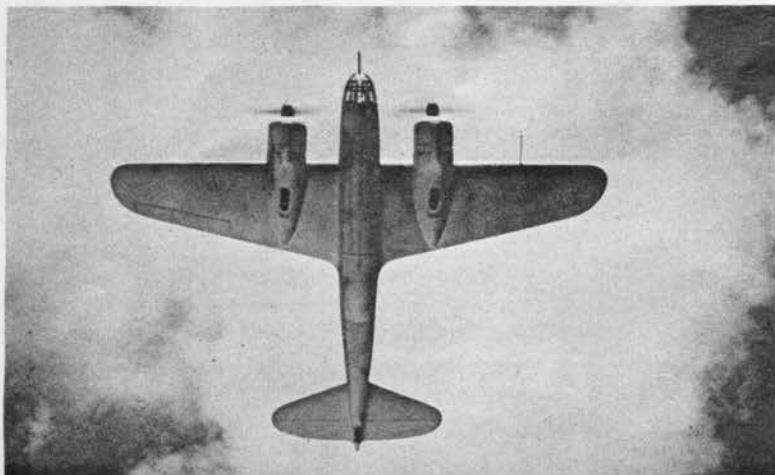
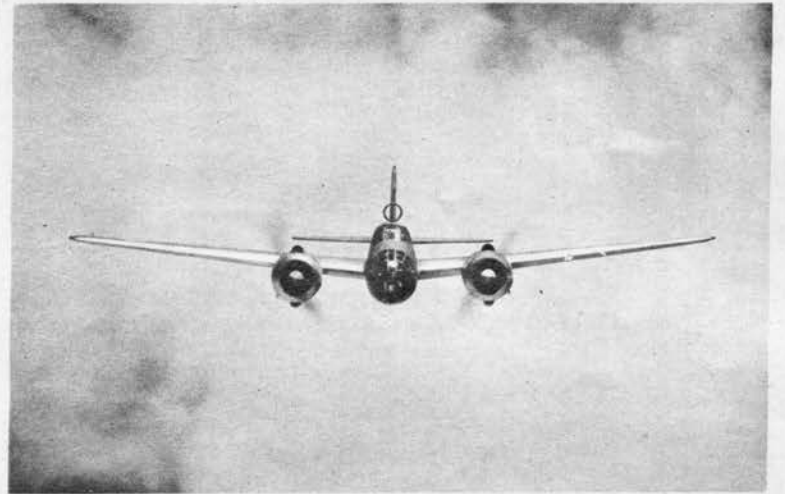
## KATE



**Four Kates** can be recognized in this unusual photograph taken at the Battle of Midway, while another Japanese plane burns after being shot down. Kate was Japan's only carrier-based torpedo plane until the re-

cent appearance of Jill (see p. 19). Kate has long transparent cockpit, pointed tail resembling Zeke's and Hamp's. Only outboard panels of wing show dihedral. Kate weighs only half as much as U.S. TBF.

## LILY



**Light bomber Lily** is distinguished by deep belly (*lower right*), underwing nacelles (*upper right*). Wing (*lower left*) has nearly straight leading edge, moderate taper on trailing edge. Normal bombload is 792 lb.

Lily is more important as a reconnaissance plane than as bomber. Nacelles on Mark II have aircoop atop cowling. Other important features are long, transparent, rounded nose, long humped cockpit cover.



## SALLY



**Mid-wing monoplane**, Sally seen head-on shows clean lines, moderate dihedral. Note large spinners, airscoops underneath nacelles. Sally has appeared in three models. Change from Mark I to Mark II added

tail gun and larger engine while in Mark III (*below, left*) turret with single 12.7-mm. machine gun replaced sloping greenhouse. With new engines, Marks II and III have shown improved performance over I.

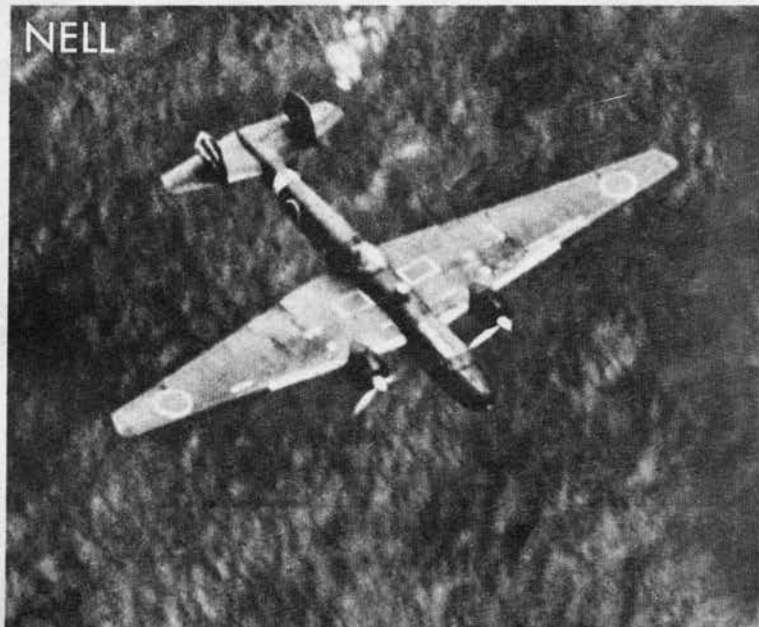


**Circular fuselage** narrows to point at tail. Tail gun may be 7.7- or 7.9-mm. machine gun, or 20-mm. cannon, though Sally has been observed releasing rear-firing mortar-type bomb detonating 100 yd. behind plane.

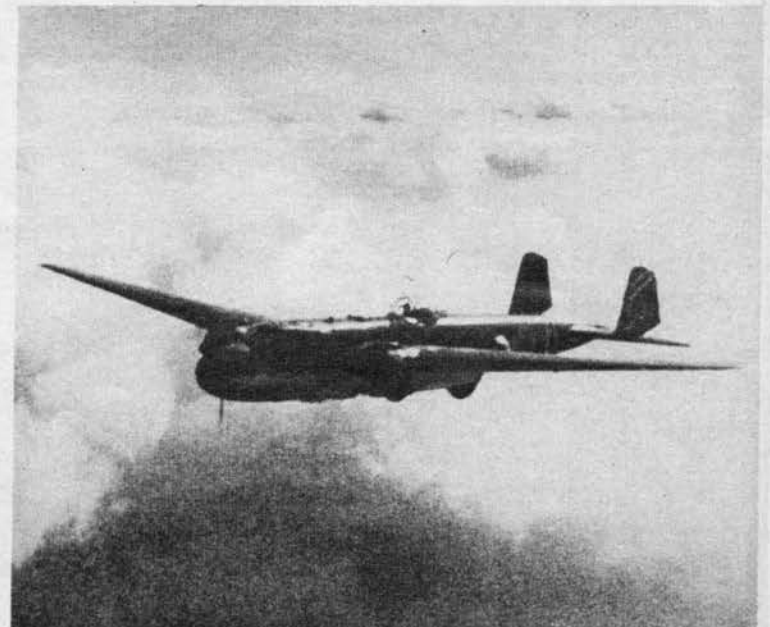


**Sally's wingspread**, 72 ft., is unusual for plane of its length (52 ft.), and exceeds that of any U.S. medium bomber. As is evident from the turret, this Sally is a Mark III. Marks I and II are still operational.

## NELL



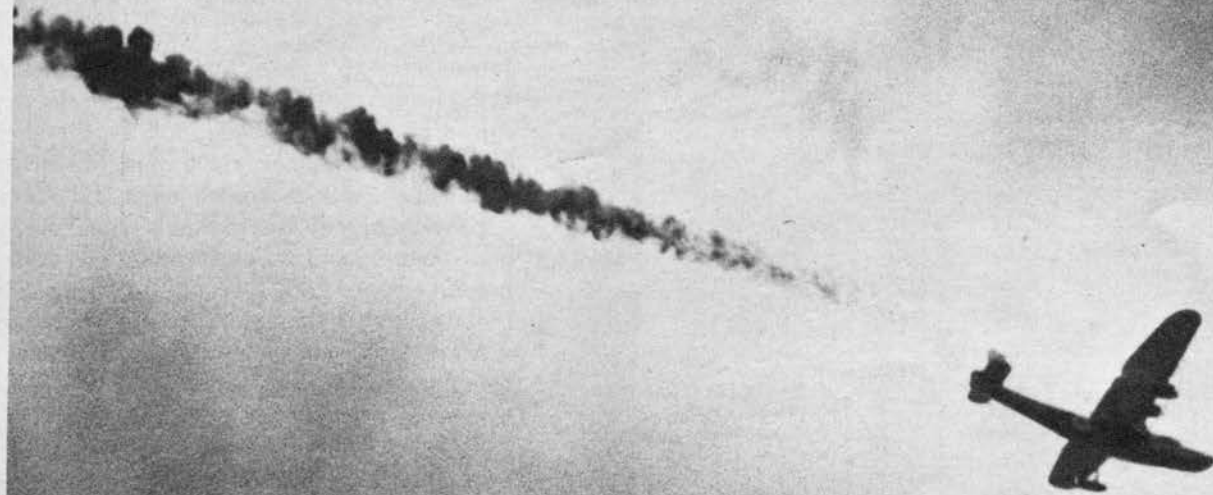
**Huge angular wing**, two fins, rudders set inboard make Nell easy to recognize. Next to Betty it is largest Jap land-based bomber in operation. Once out of service, Nell has returned with more powerful engines.



**Long-range aircraft**, Nell can fly about 2,500 miles nonstop, is used as bomber, torpedo plane, patrol plane. Nell has one machine gun forward, two in waist, one in belly, 20-mm. cannon in top rear turret.



## MAVIS



**Flying boat Mavis** (*above*) is being replaced by more compact Emily (*below*). Mavis can be identified by its four engines, braced parasol wing, fixed wing floats and twin fins and rudders set inboard on braced stabilizer. Hull has flat sides, rounded top. Resembling RAF's Sunder-

land, Emily has shoulder wing, high single fin and rudder. Wing's dihedral stems from the roots; leading edge has only slight taper, while trailing edge shows considerable taper. Mavis shown here was shot down by a Navy Liberator, while Hellcats accounted for the Emily.

## EMILY





# JUDY & JILL ARE LATEST

**L**atest aerial threats to our naval forces in the Pacific are the two new Japanese planes shown on these two pages. Judy is a carrier-borne reconnaissance plane that has also seen some action as a divebomber. Jill is an improvement on Kate, the Jap's reliable torpedo bomber, and is both carrier- and land-based.

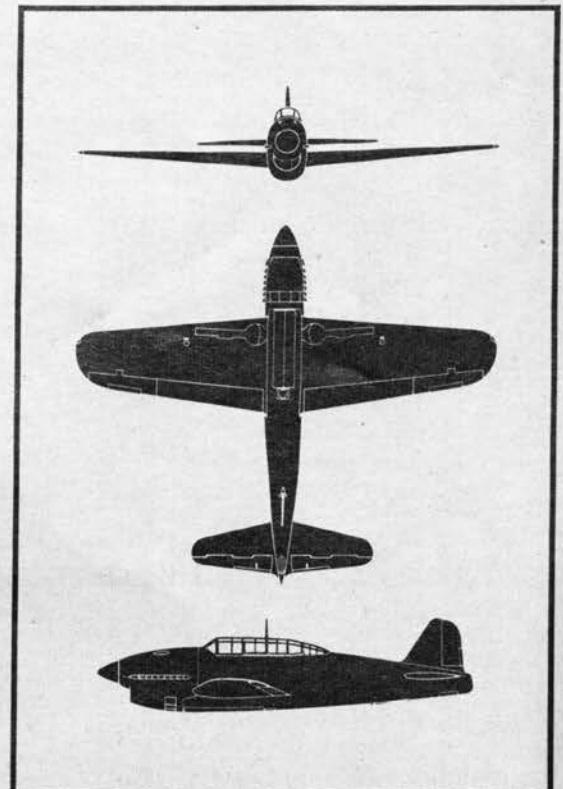
Judy (*left*) is the second recent Japanese venture into inline-engine craft, the other being the fighter Tony (*see p. 8*) which it somewhat resembles. Chief difference is in Judy's slightly smaller wing, somewhat longer fuselage. As a divebomber, Judy can carry at least a 100-lb. bomb outboard on each wing and 550 lb. in the bomb bay. Judy carries a crew of two. Its armament consists of two 7.7-mm. fixed guns firing forward and one flexible 7.7 in the aft cockpit. It has a span of 37 ft. 9 in. and is 35 ft. long.

The torpedo plane Jill so closely resembles Kate that on first appearances it was usually mistaken for the older plane. In fact, it may well be a souped-up version of the earlier craft. It has a bigger twin-row engine, requiring a more prominent cowl and a four-bladed propeller. Jill can carry one 1,760-lb. torpedo or six 250-lb. bombs on external racks. It is armed with a single 7.7-mm. free-firing gun in the aft cockpit. Span is 48 ft. 6 in.; length, 35 ft. Both silhouettes are provisional.

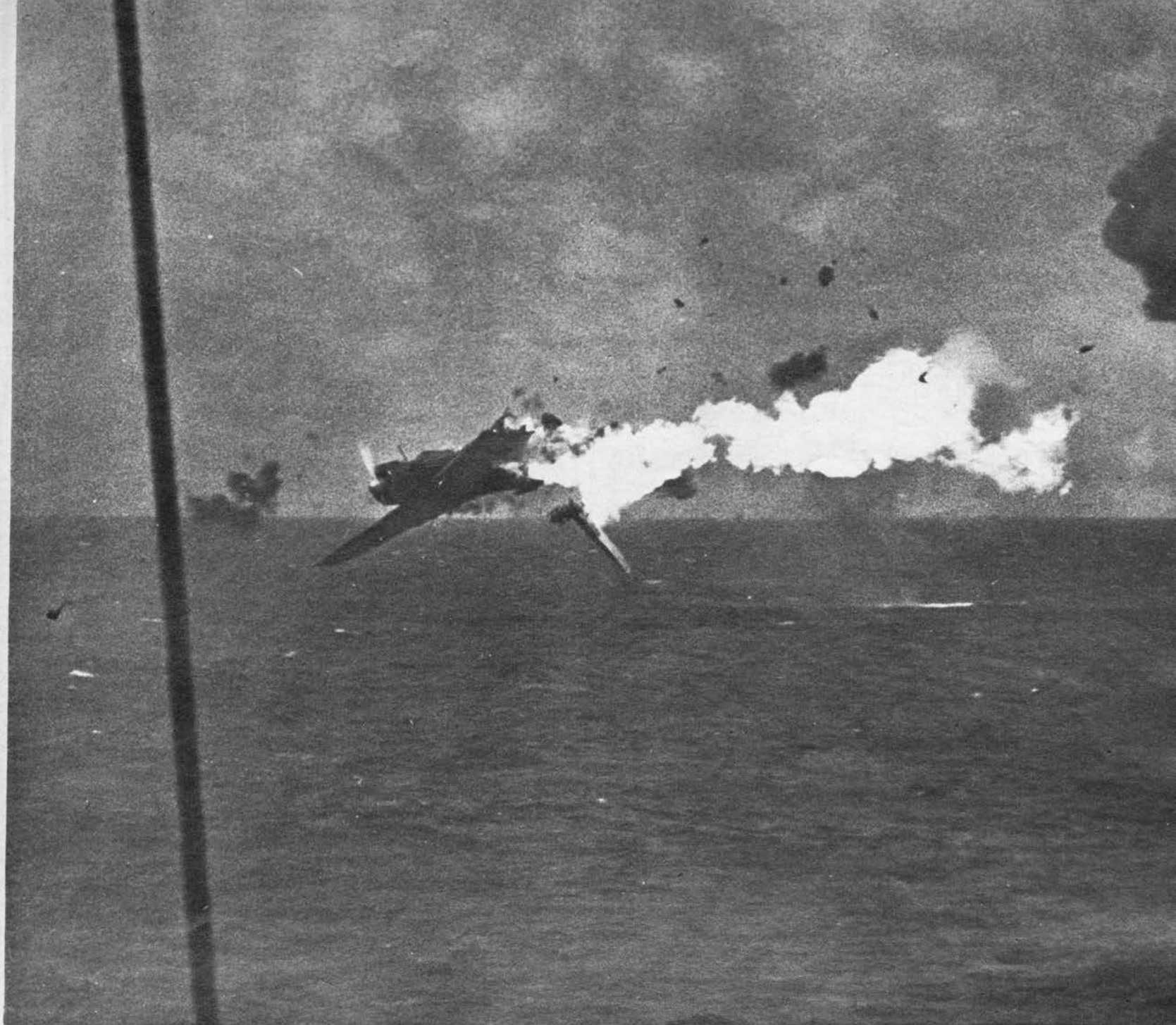
JUDY IN PLAN VIEW SHOWS ITS LONG FUSELAGE, SHORT EQUALLY-TAPERED WING AND TAILPLANE



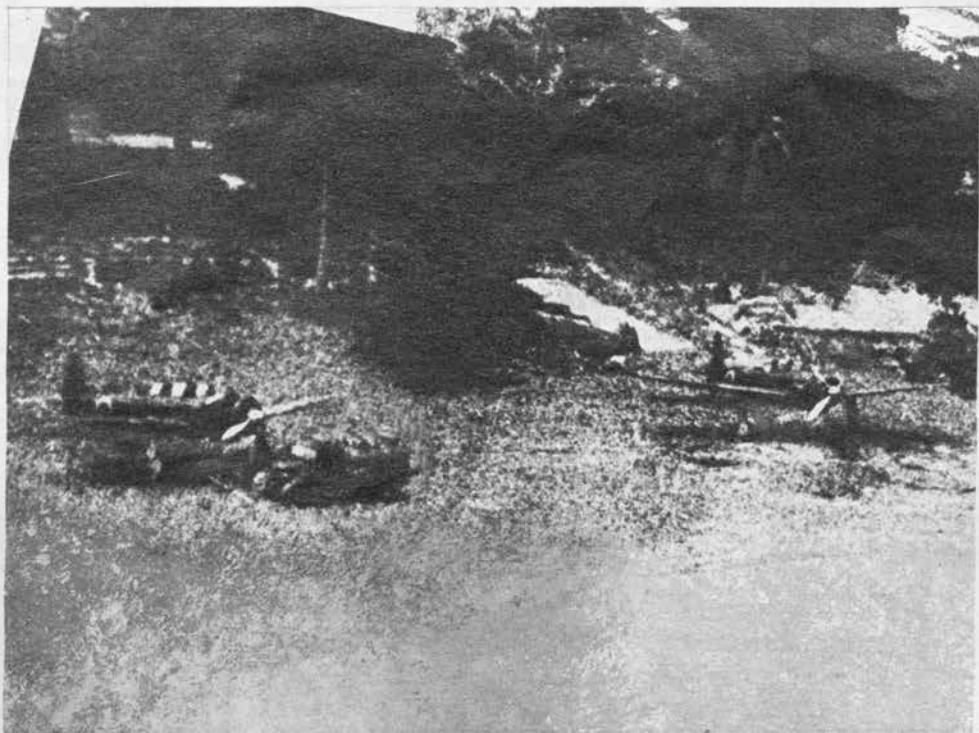
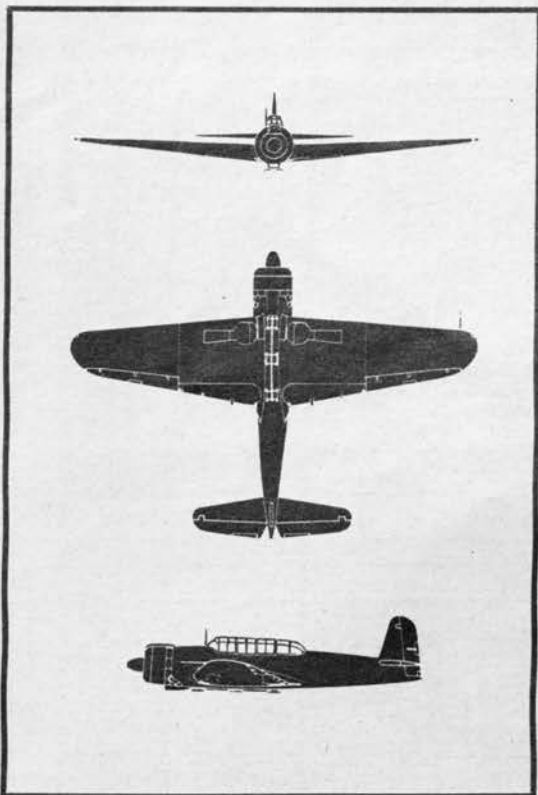
**Wrecked Judy** supplied early technical intelligence on new type. Note the distinctive features: deep flat-sided fuselage, bladelike projection at tail, high-set tailplane, midwing.







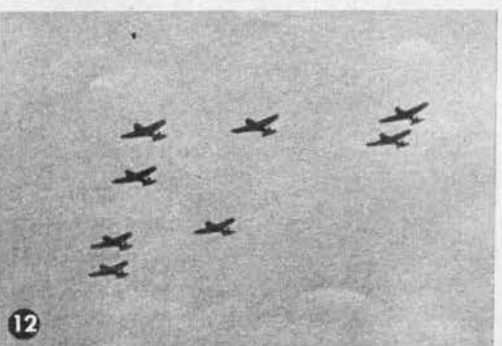
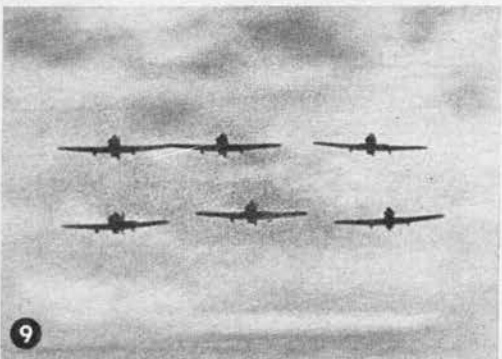
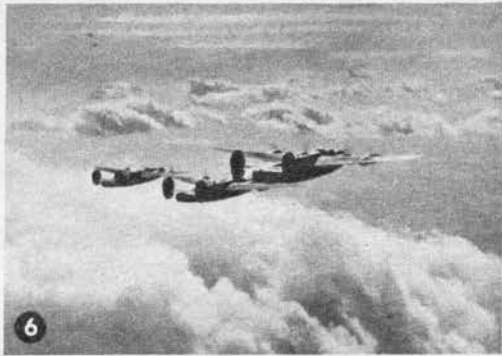
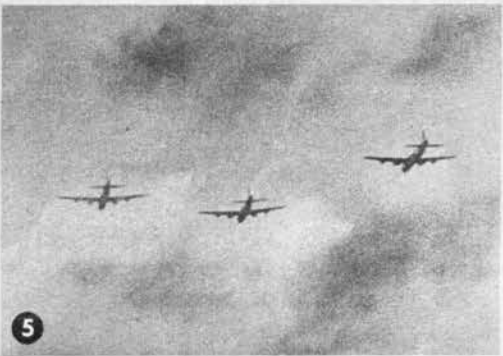
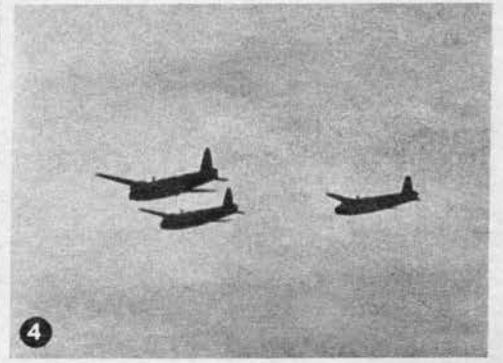
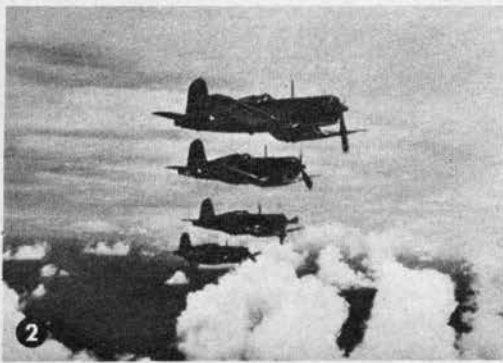
SUICIDAL ATTACK ON AMERICAN WARSHIP GAVE FIRST DRAMATIC PICTURES OF NEW JAPANESE TORPEDO BOMBER JILL. IT WAS FIRST MISTAKEN FOR MODIFIED KATE



**Jills on ground** show a marked resemblance to Kate. Noteworthy are long greenhouse, tall fin and rudder, prominent nose. Plane at right clearly shows four-bladed propeller.



# QUIZ NO. 2: WARPLANE FLIGHT PATTERNS



For answers, see p. 50





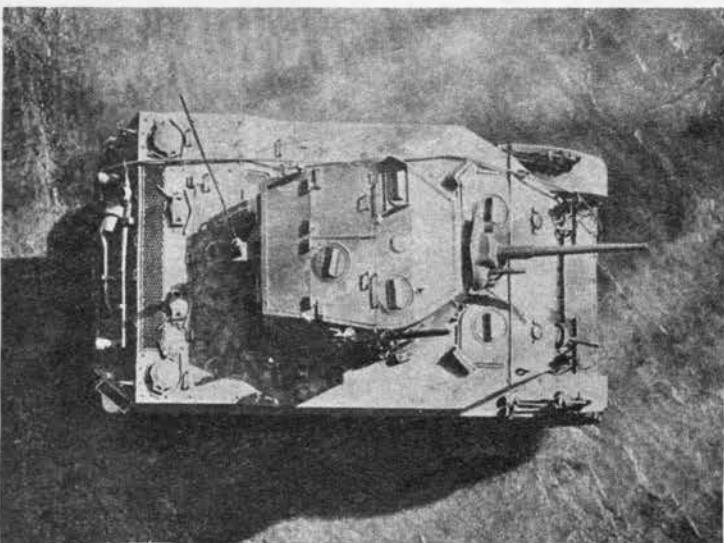
U. S. LIGHT TANK M-5, WITH ROUNDED TURRET, LED THE LANDING FORCE AT SICILY. HIGH, FLAT-TOPPED HULL IS RAISED AT BACK, ANGLED IN TOWARD FRONT

# LIGHT TANKS

For mobility combined with striking power  
they are unchallenged by heavier rivals

In spite of a trend toward heavier vehicles, the light tank holds its own. No other is so useful in sounding out defenses, developing weak spots and cutting through to vital communications centers. Light tanks ride well in bad terrain. Their armor is proof against MG fire and they can knock out heavier opponents.

Standard U.S. light tanks, M-5 and M-5A1, shown here, have excellent striking power for their weight. A group of M-5's in Sicily knocked out 15 German Mark IV's for only three of their own. Main weapon, a high-velocity 37-mm. cannon, is mounted coaxially with a .30-cal. MG. Another .30-cal. MG is situated on hull bow and a .30-cal. AA machine gun fires from top of turret.



Newest model U. S. light tank is the M-5A1, differing from M-5 in its six-sided turret which houses a radio in boxlike rear extension.



M-5A1 silhouette is high but tank is protected by slanting, welded armor. Typical U.S. suspension has two pairs of tandem bogies.



## SOVIET



**Soviet light tank design** began with an amphibian model and gradually evolved a land tank. The T-40 (*upper left*) is a late amphibious design whereas new T-70 (*below*) has dropped its water-going features. Both of

the tanks are modern in construction with sloping lines, turret well forward, welded armor plate. Silhouettes are broad and low affording a stable gun platform at high speed. The tank in the rear is a T-34.



**Newest Soviet light tank**, the T-70 (*above and below*), has low pyramidal turret with a 45-mm. gun protruding from large rounded mantlet. Face of hull is broad, sloping; rest is flat-topped and straitsided,

although externally-mounted equipment gives it irregular shape. Unlike heavier Soviet tanks, T-70 has driving sprocket in front. Five medium-sized bogie wheels and three return rollers complete suspension.







**U.S. Rangers** round up enemy equipment at El Guettar. At left is the PzKw Mark II, smallest and oldest German tank. Once it was a Panzer standby, adding speed and punch to the rapid invasion of Poland and

the Low Countries and carrying Nazi infantry in swift pursuit of a disorganized enemy. Now obsolescent, its Mark II chassis has been used to mount several SP guns. At the right is Nazi 8-wheeled armored car.



**Nazi light tank PzKw II** has a short broad silhouette, flat-topped hull, and a low angular bow reinforced by spare track segments. Turret is squat and slab-sided except at front where it forms sloping curve. Rear

of turret has a heavy boxlike extension. Several versions of the Mark II have existed. The one above mounts a 20-mm. cannon. Five medium-sized bogie wheels are sprung by unusual elbowlike rocker arms.





These Jap armored cars in northern Burma barely escaped blasting by British planes. Though they are actually tiny tanks, often called tankettes, Japs refer to them as "light armored cars, model 2597," af-

ter their version of calendar year 1937 in which they were built. They are latest known of a series of models produced as early as 1932 for patrol and reconnaissance duties in China and later in the Philippines.



The 2597 is first of series to mount 37-mm. cannon in turret. Its large rear idler provides greater ground traction. The later models may have heavier armor plate, wider track, and an intercommunication system.



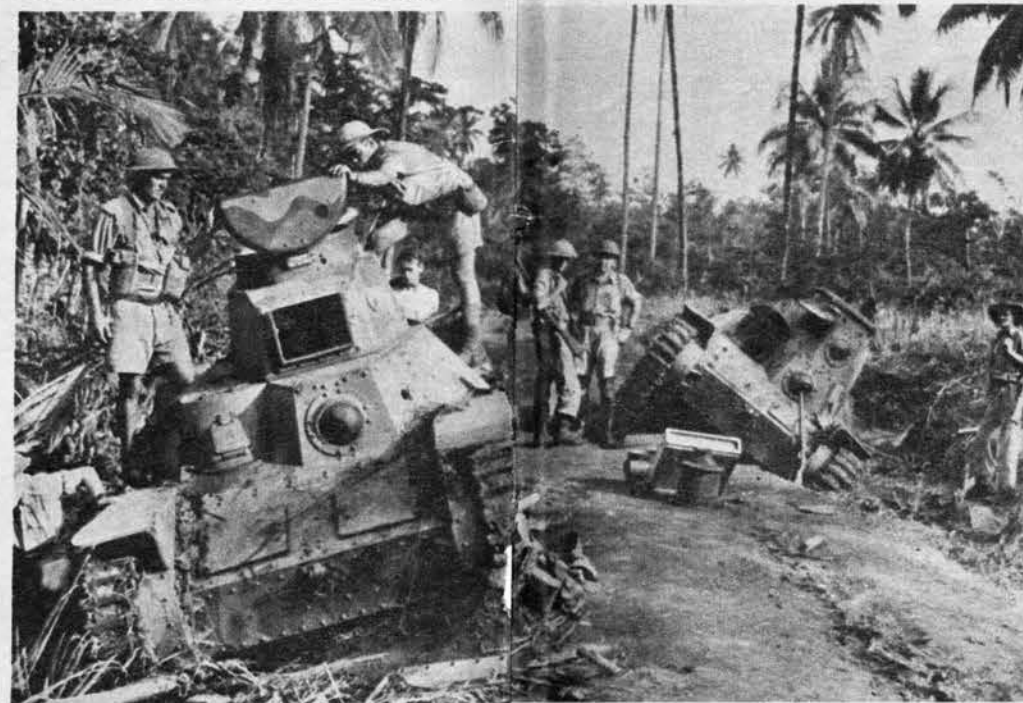
Parade of 2597 armored cars in Tokyo shows sloping face of hull, cylindrical turret with dome-shaped cover and rectangular gun mantlet. Tank weighs about four tons, accommodates two in cramped style.



Small dimensions of tank are accentuated by comparison with Jap foot soldiers. From 1935 to 1937 the Japs concentrated on production of these very small tanks, using them virtually unopposed in China.



Basic Jap suspension system consists of bell-crank arms holding a rocking pair of bogie wheels. The light tank 2595 shown here, built in 1935, has two pairs of bogie wheels and two return rollers supporting a narrow track, with the driving sprocket in front. Its top speed is 25 to 30 m.p.h.



These 2595 light tanks were the only ones Japs were able to land in Milne Bay, New Guinea. Armed with 37-mm. turret guns,



they drove up the road at night, turned searchlights on Allied infantry and created an initial diversion until they bogged down.



Triple armament of 2595 includes a 37-mm. gun in the turret, a machine gun in the right rear of turret, another in the left front of hull. The guns cannot fire simultaneously. Later models may mount a 47-mm. cannon. Turret is roughly conical with cupola atop. Hull has angular bow.



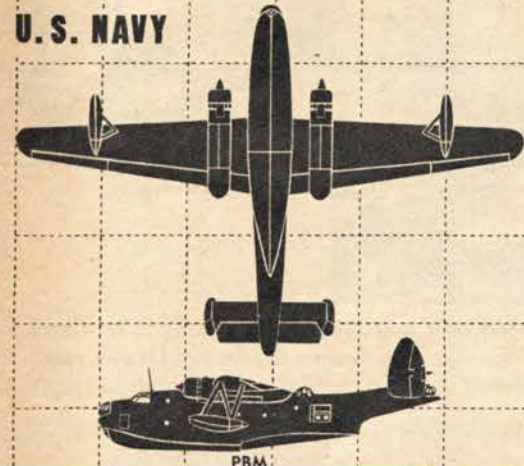
# ALLIED AIRCRAFT

## PRINCIPAL U.S. & BRITISH TYPES

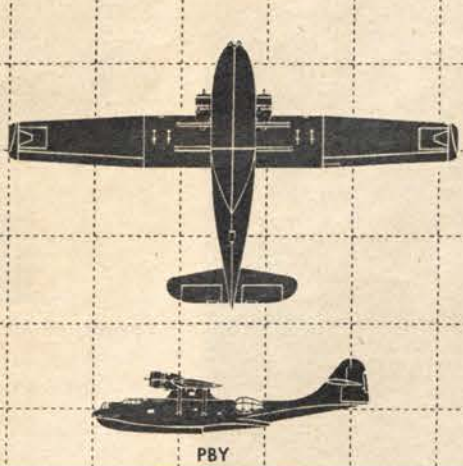
RESTRICTED



### U. S. NAVY



PBM



PBY



PV



TBF



SB2C



F6F



SBD



F4U



F4F



OS2U

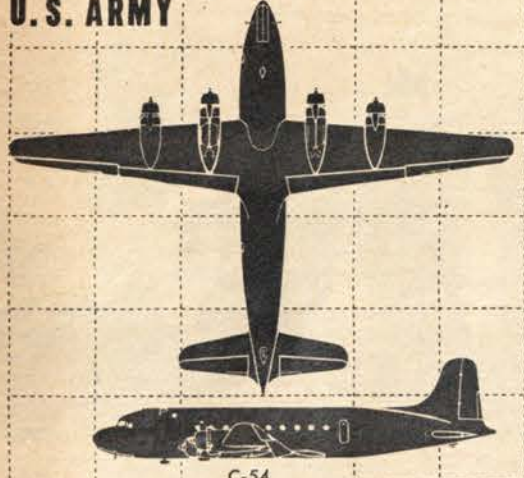
Silhouettes of the 36 most important operational Allied airplanes are presented on these pages as a sequel to the spread of outstanding enemy aircraft which appeared in the

April issue of the *Journal*. Across the top are ten topflight airplanes of the U. S. Navy, while below two groups of 13 cover the main types in combat service with the U. S. Army Air Forces

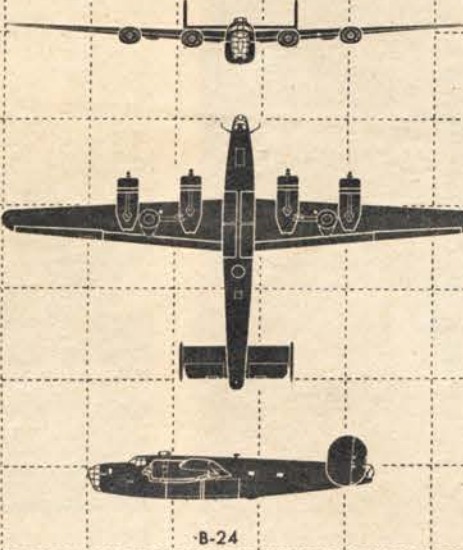
and the RAF. Like last month's chart of Axis airplanes, these two pages may be easily lifted out for future recognition study and quick reference. Scale: Each square equals 20 ft.



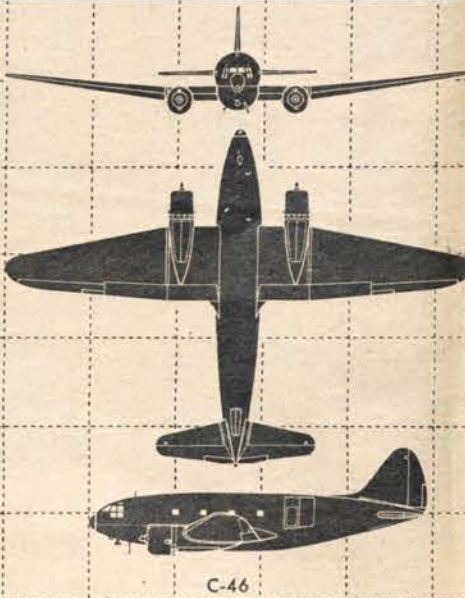
### U. S. ARMY



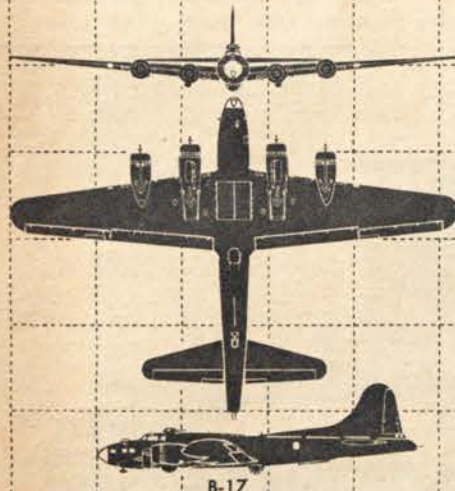
C-54



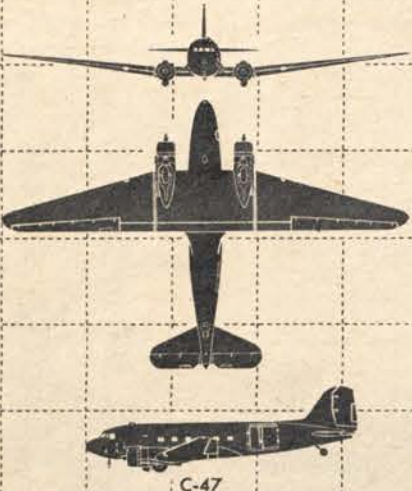
B-24



C-46



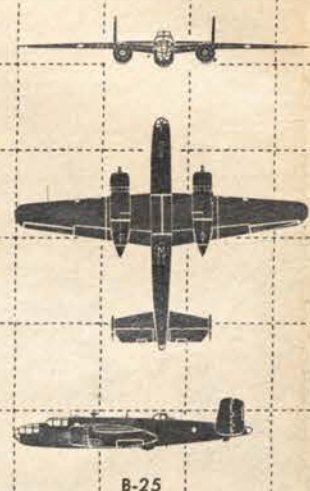
B-17



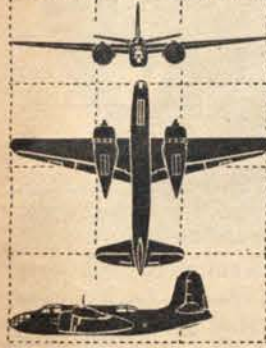
C-47



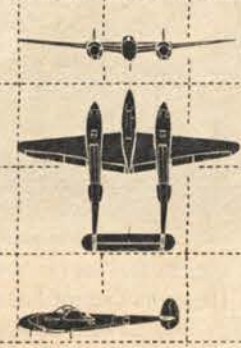
B-26



B-25



A-20



P-38



P-47



P-40

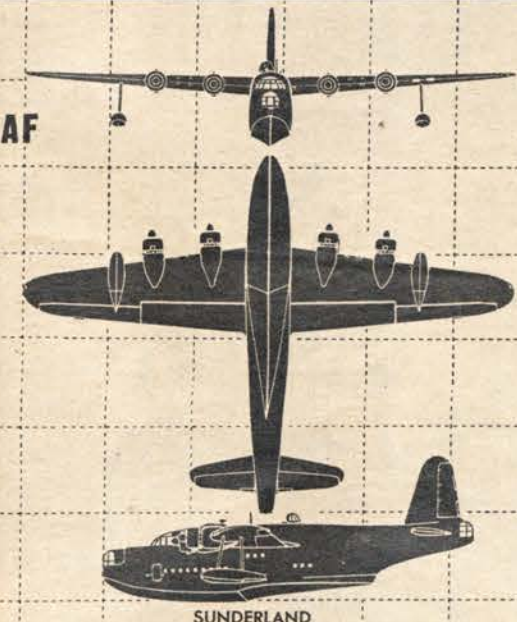


P-51

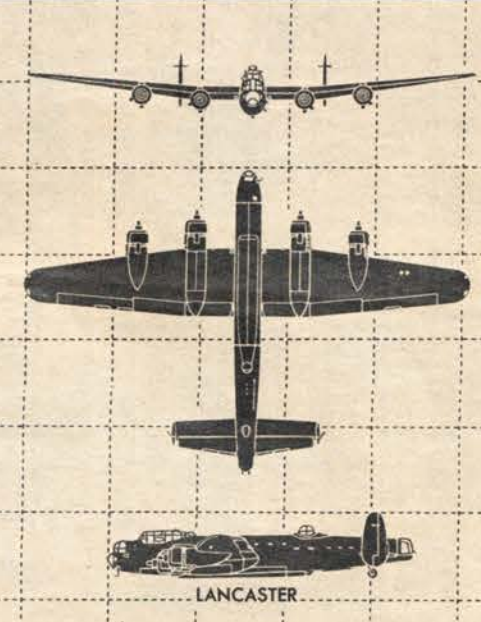


P-39

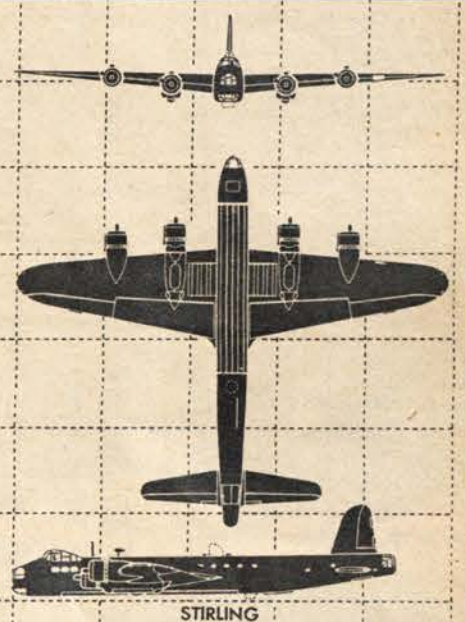
### RAF



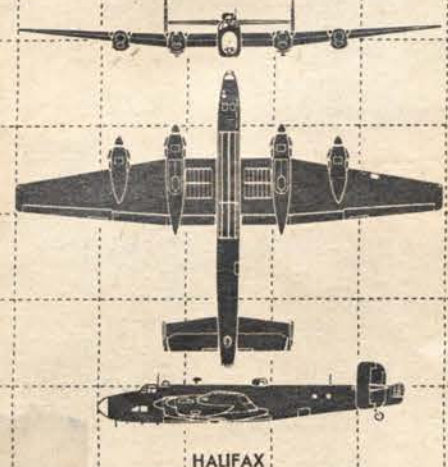
SUNDERLAND



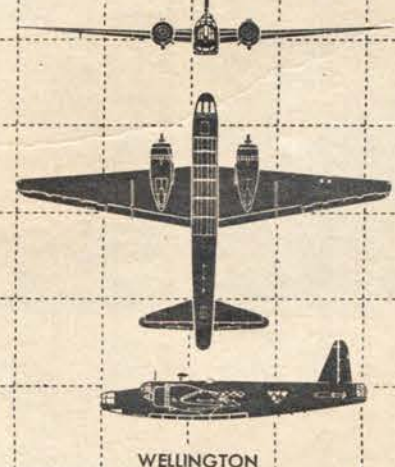
LANCASTER



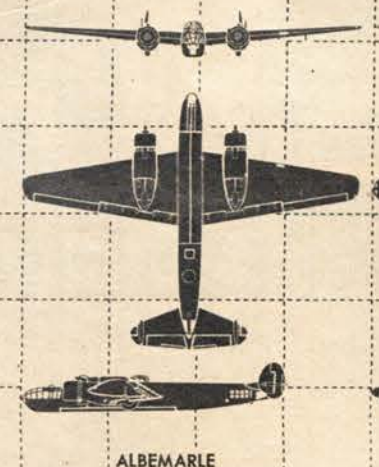
STIRLING



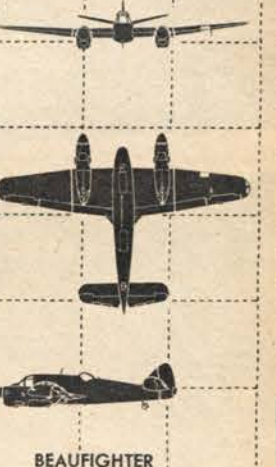
HALIFAX



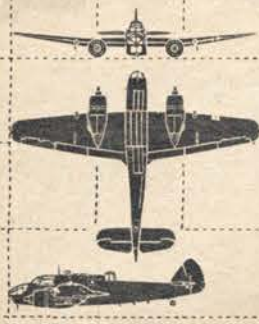
WELLINGTON



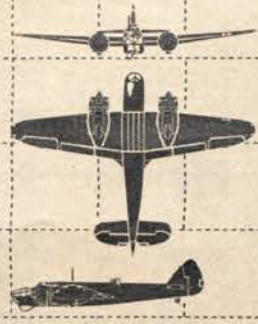
ALBEMARLE



BEAUFIGHTER



BEAUFORT



BLenheim



MOSQUITO



TYPHOON

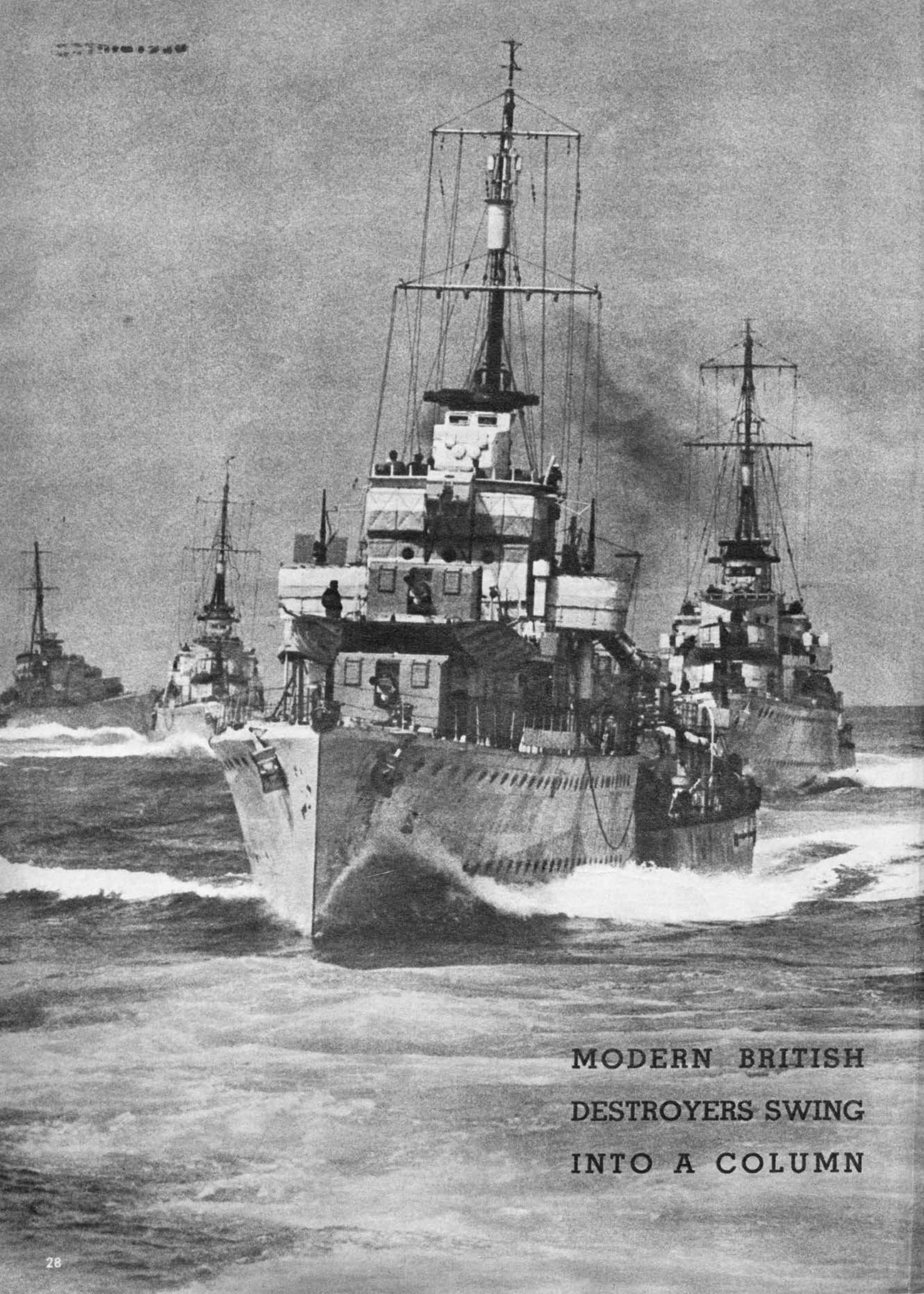


HURRICANE



SPITFIRE





MODERN BRITISH  
DESTROYERS SWING  
INTO A COLUMN



# DESTROYERS

## NIMBLE FLEET WEAPON HAS COME OF AGE

**T**he destroyer is a modern weapon of war. Unlike its bigger sisters, the battleship and cruiser, the DD has no historical forebears in the sailing-ship fleets. Like the aircraft carrier it is the product of machine-made war. Its development is almost entirely compassed by this century.

During the Anglo-French naval rivalry of the early 1890's the "jeune école" element in the French Navy loudly proclaimed its intention of conducting a sink-at-sight war against all British ships, naval and merchant. Chief weapon was to be the new powerful antiship projectile, the Whitehead torpedo, as launched by a strong French torpedo-boat force. If Britain was to maintain its control of the seas, this threat had to be answered.

The first destroyers were conceived as small vessels, faster and better armed than torpedo boats. Translated into steel in 1892 this idea became His Majesty's Torpedo-Boat Destroyers Havock and Hornet, 250-ton ships of 27-knot speed carrying a principal armament of one 3-in. gun and two 14-in. torpedo tubes. Actually "super-torpedo boats," they greatly resembled their prey. They had the same turtleback forecastle but had greater speed, freeboard, sea-keeping ability and gunpower. Not only did the destroyer outmatch the torpedo boat's guns, it took over its torpedo-launching functions and became an offensive as well as a defensive fleet weapon.

From their inception until the first World War, the development of destroyers was largely a matter of increasing size, armament and seaworthiness. The first five British classes averaged slightly under 400 tons displacement; the first four American slightly over 400. By the time of World War I average tonnage had risen to about 1,000. Speeds increased from 27 and 28 knots to slightly over 30, while armament went up from one or two 3-in. guns to four or six 4-in.; from two torpedo tubes to four or six.

As the destroyer increased in size and power it underwent structural changes. The turtleback bow gave way to raised forecastle which is still a common destroyer characteristic. As designers tried to increase the ship's speed, they experimented with a great variety of boiler-room arrangements so that even ships within one class might have widely differing stack and mast patterns. Private ship builders were permitted considerable latitude in interpreting Navy specifications, and not until the demands of war in 1914-1918 forced the adoption of production short cuts did the destroyer begin to take on a type appearance.

By the first great war the destroyer had taken its proper place among the indispensable warship types. To her regular fleet duties of attacking and defending battle lines were added the tasks of strategic and tactical scouting, patrolling ocean and coastal waters in the economic blockade of Germany, covering and supporting beach-head landings, tracking down submarines, and possibly most important of all, protecting the great convoys which carried vital supplies to England and France. With the development of depth charges, the destroyer rapidly be-

came the most effective antidote to the submarine, particularly in the latter days of the war when they were implemented with newly developed listening gear.

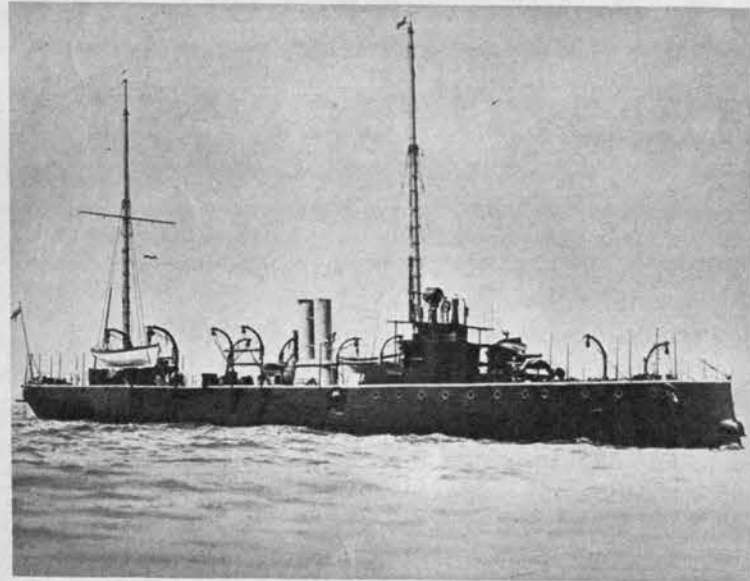
Until 1918, destroyers detailed to fleet duty operated in large flotillas. Small cruisers had served as flagships but they were generally too slow or unwieldy. In 1910, however, H.M.S. Swift was launched. This was a 2,207-ton ship, the largest British destroyer built prior to the present war. Specifically built as a flotilla leader, it had greater speed (35 knots) and more fire-power (four 4-in. guns) than any other contemporary DD. After the Swift, several classes of leaders were commissioned, though no other British leader approached the Swift in size. With the end of World War I, however, smaller destroyer formations, larger fleet destroyers which could be fitted as flagships, and the greater demand for tactical flexibility made the leader a superfluous type.

During that war, fleet destroyers continued to advance in size and fighting power, though the necessity for getting a number of ships into action quickly tended to standardize designs within moderate limits. The increased stability of the new designs made possible the mounting of superfiring guns, first to fire forward in the British Seymoure Class leaders, then to cover the whole battery, as in the Admiralty "V" Class. Gun calibers rose from the standard 4-in. to 4.7-in. while torpedo batteries increased to a maximum of twelve 21-in. tubes on the U.S. flushdeckers. Most DD's of the period kept the high forecastle and broken deck, but the U.S. Navy produced its famous mass-produced flush-deck design. These good sea boats sacrificed an advantageous gun disposition for an exceptionally heavy torpedo battery. Their worth has been demonstrated through the current war in which many are seeing heavy auxiliary duty.

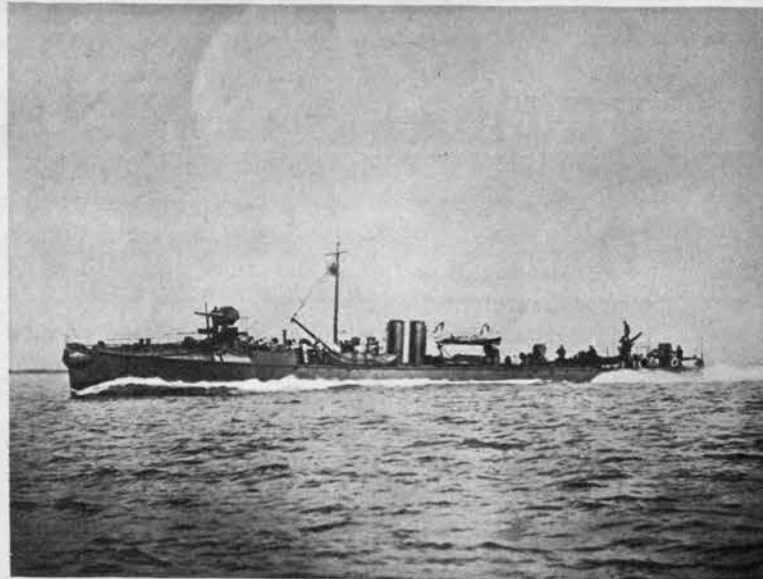
With the signing of the Armistice, the construction of destroyers, as of all instruments of war, slackened. When it was resumed in the early '30's the ships of individual nations began to take on individual characteristics and the British influence began to be less apparent. Emphasis was placed on engineering performance rather than on startling innovations in military character. Most distinctive variants from the main line of development were the French superdestroyers with displacements ranging from 2,126 to 2,884 tons. These ships, which mounted up to eight 5.5-in. guns and had speeds to 38 knots, also affected the designs of war-minded Germany and Russia. Modern German and Soviet DD's are basically copies of the big French ships except for the distinctive national architecture in hull lines and superstructure.

Though many old ships are fighting today, great bulk of this war's destroyer fleets are of wartime construction. We cannot safely reveal much about the performance of these ships but the pictures on the following pages, including quiz on page 48, should enable you to identify all operational classes of this great type of fighting machine.

# HISTORICAL DEVELOPMENT OF BRITISH



**TORPEDO-BOAT CATCHER** lacked speed to live up to name. Britain next developed the destroyer as reply to the French. Ships like H.M.S. Sandfly, assigned to patrolling, were re-rated torpedo gunboats.



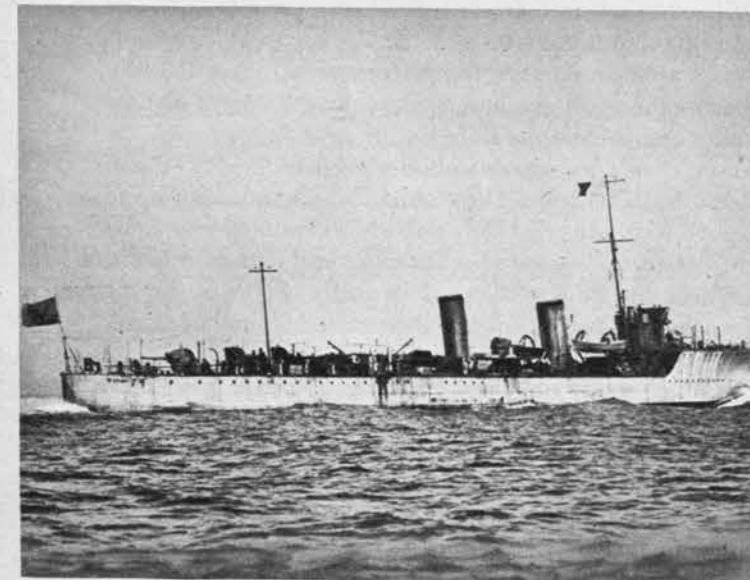
**FIRST DESTROYER CLASS** included H.M.S. Havock which established basic pattern for hundreds of early craft. Mounting heavier armament, she was a big torpedo boat, rated as "torpedo-boat destroyer."



**RAISED FORECASTLE** appeared with H.M.S. Waveney of 1904 "E" or "River" Class. Earlier turtleback forecastle boats had lower silhouette, but this improvement gave destroyer distinctive outline.



**FIRST FLOTILLA LEADER**, H.M.S. Swift, resembled much smaller Basilisk (above). An intermediate type in early destroyer development, the "G" Class Basilisk appeared in the same year as the Swift, 1910.

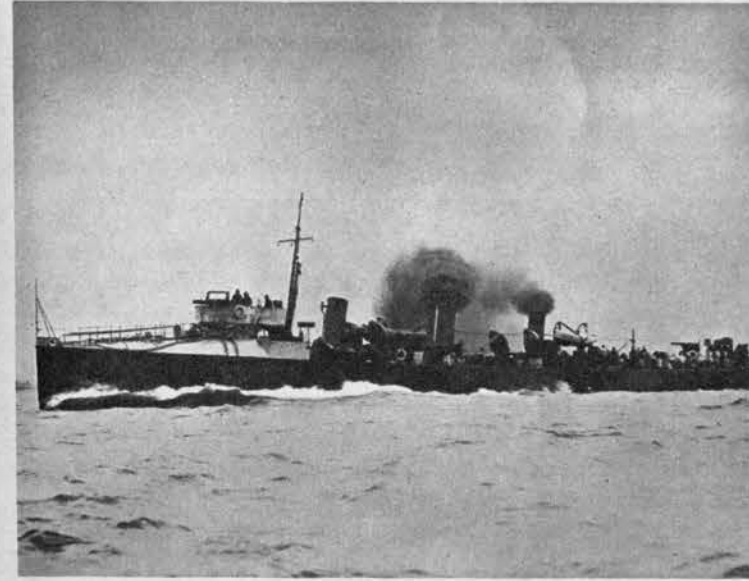


**FLEET DESTROYERS**, 1913-1916, had displacement of 900-1000 tons; speeds averaging 34 knots. Typical was H.M.S. Laurel of the "L" Class, which were first DD's to have names starting with class letter.

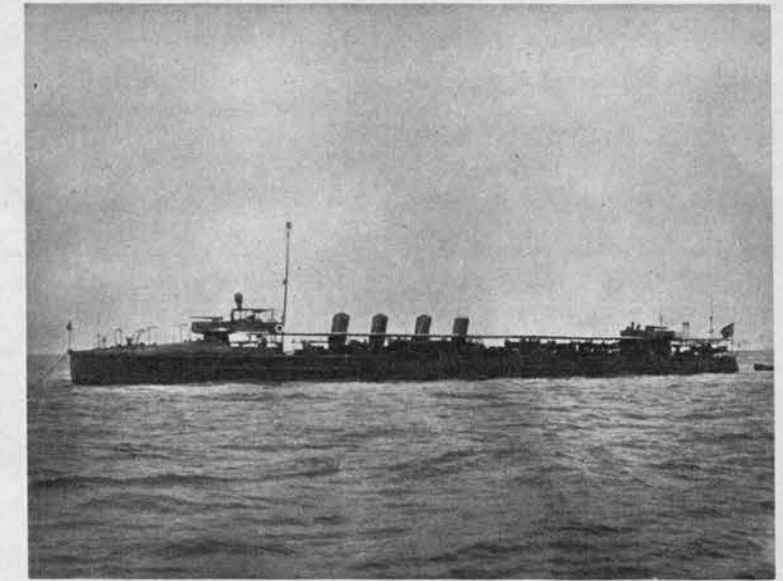


**SUPERFIRING GUNS**, greatest single step in destroyer evolution, were introduced in 1916 by Seymoure Class flotilla leaders, named for famous British naval officers. This is the Anzac, first Australian leader.

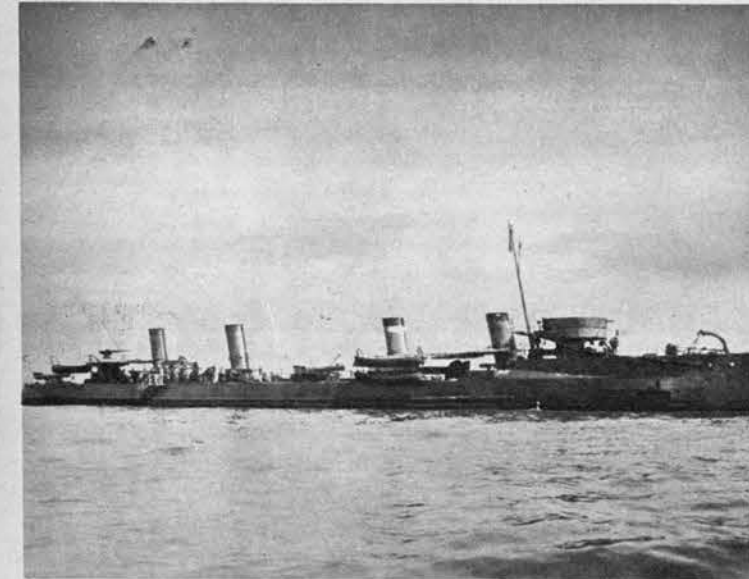
# AND OF U.S. DESTROYERS THROUGH 1917



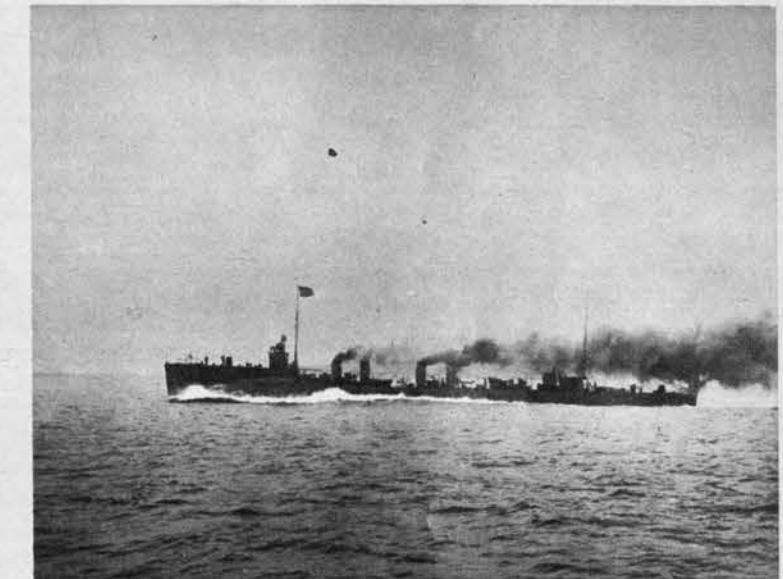
**DESTROYERLESS U.S. NAVY** encountered Spanish "Destructores" in 1898 at Santiago. Ill-fated Spanish destroyers looked like pictured Bullfinch, an early British "C" Class with turtleback forecastle.



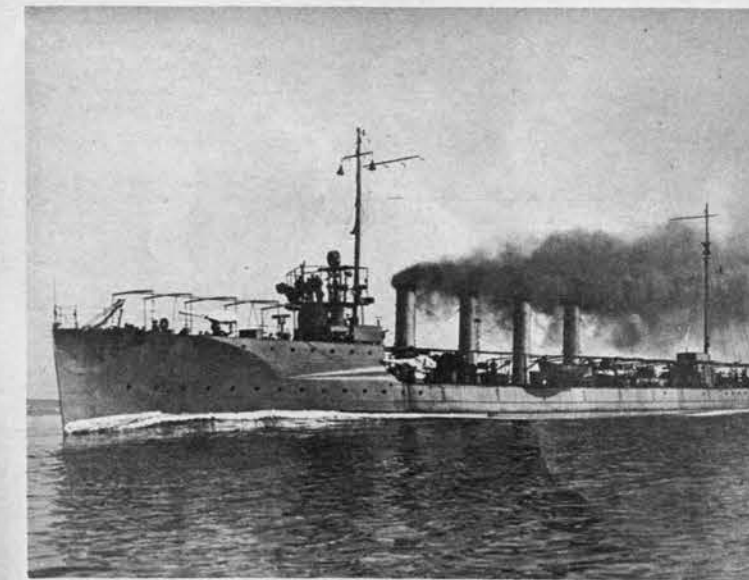
**EARLY U.S. DESTROYER** shows U.S. preference for four stacks, very low in U.S.S. Lawrence. She has British turtleback with simple bridge, replaced by raised forecastle in several Bainbridge Class boats.



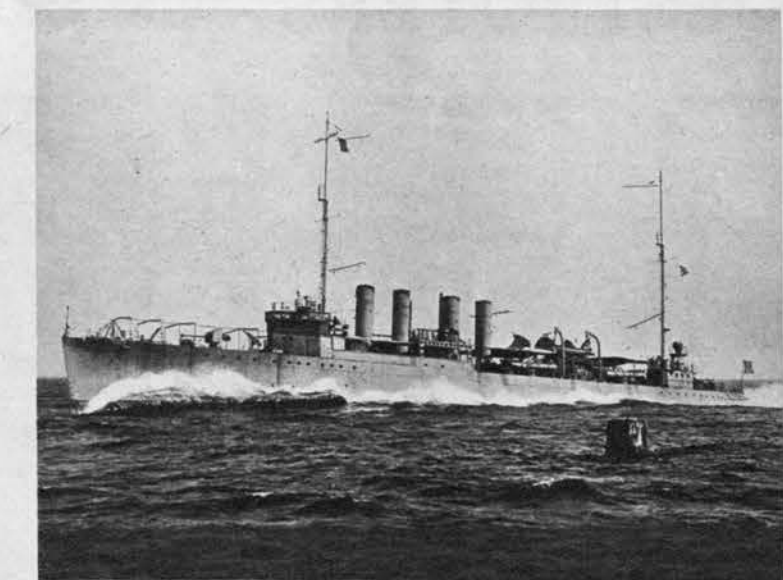
**RAISED FORECASTLE** was introduced by the Navy in first U.S. destroyer class (Bainbridge). In order to lessen boiler plant damage, fire-room groups were split, hence U.S.S. Perry's odd stack arrangement.



**"BROKEN-DECKERS"** of the U.S. Navy fought in World War I. Their basic design was set up by an "improved Bainbridge," the U.S.S. Flusser (above), first commissioned with the low stacks seen here.

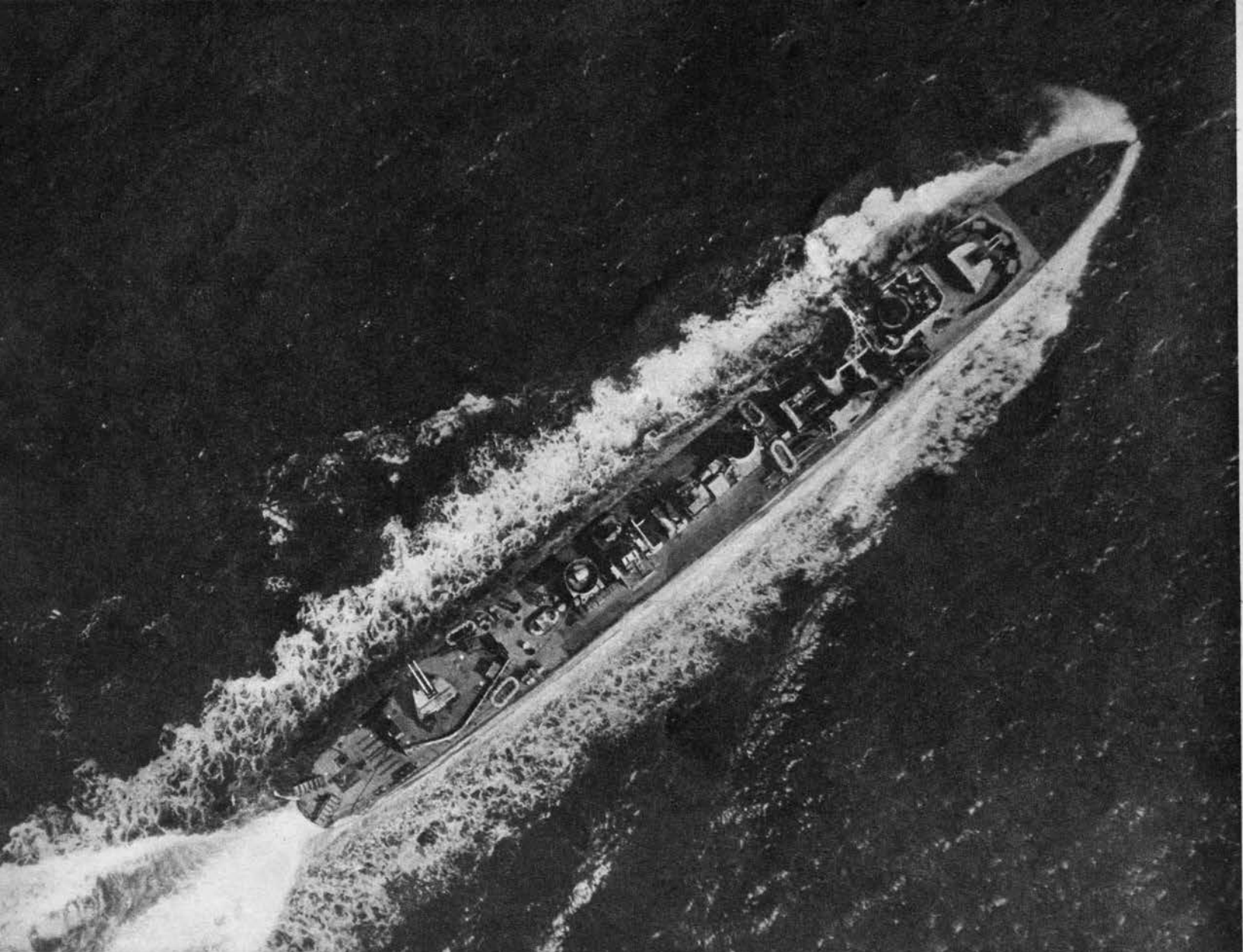


**WITH RAISED STACKS**, U.S.S. Preston, of same class as Flusser, typified appearance of U.S. destroyers until 1917. Some ships of Paulding Class had only three stacks instead of prevailing American four.



**THE FLUSH-DECKER** was standard U.S. destroyer in World War I. Babbitt, photographed in original rig, was one. Tall mainmast, searchlight on after deckhouse and No. 4 gun on fantail were later changed.





H.M.S. WINCHESTER, DD OF ADMIRALTY "W" CLASS, SHOWS TYPICAL DESTROYER HULL PLAN AS SHE PLOWS THROUGH A LIGHT SEA AT 25 KNOTS

# ROYAL NAVY ORIGINATED DESTROYERS

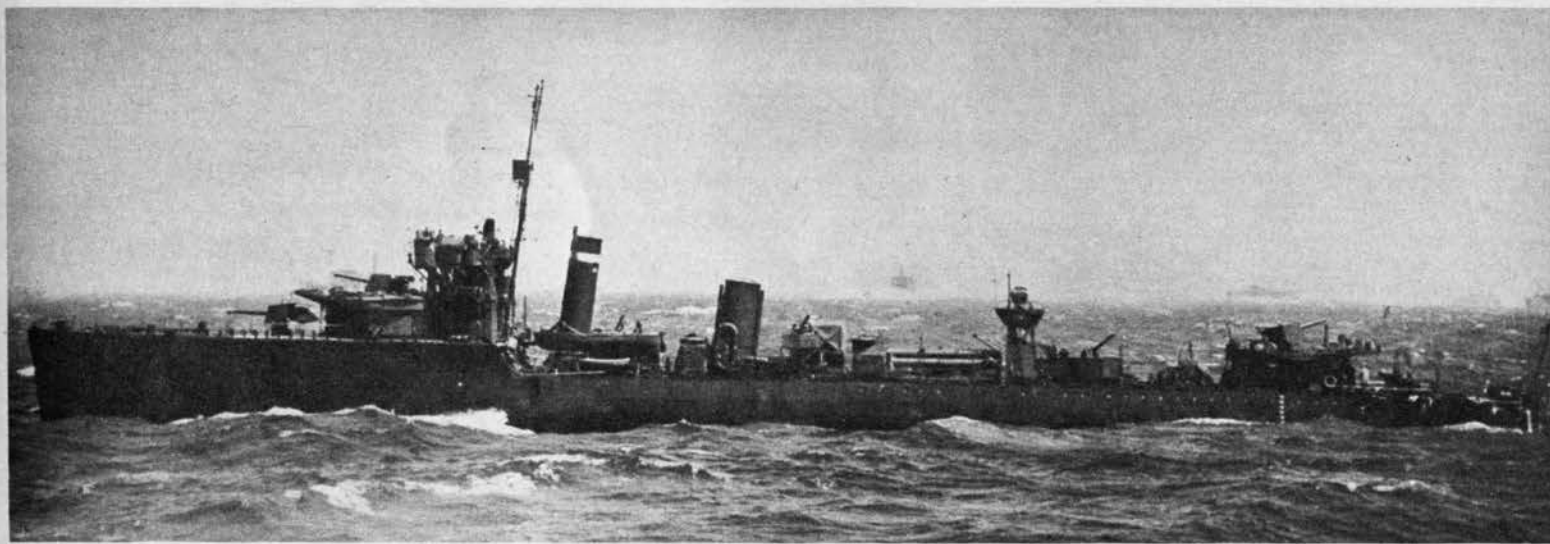
In their destroyers, as in their larger ships, the British have generally shown a preference for a larger number of good average vessels than for a limited force of record-breakers. This has resulted in a consistent trend of DD design as shown by the late World War I vessels on these pages and the between-wars and wartime construction on following pages. High point of this trend is the Tribal Class of 1938 and 1939. These ships were an answer to French and German superdestroyers. They sacrificed torpedo armament for heavier gunpower while retaining high speed and fine sea-keeping ability. The superdestroyer threat having failed to come off, British wartime building has gone back to smaller boats. These wartime DD's have, however, kept the gun armament of the Tribal Class ships so that they form a formidable force of moderately sized fighting craft.



**ADMIRALTY "V" CLASS** Versatile has many characteristics of British ship construction: square-cut bridge, angular gun mounts, sharp-

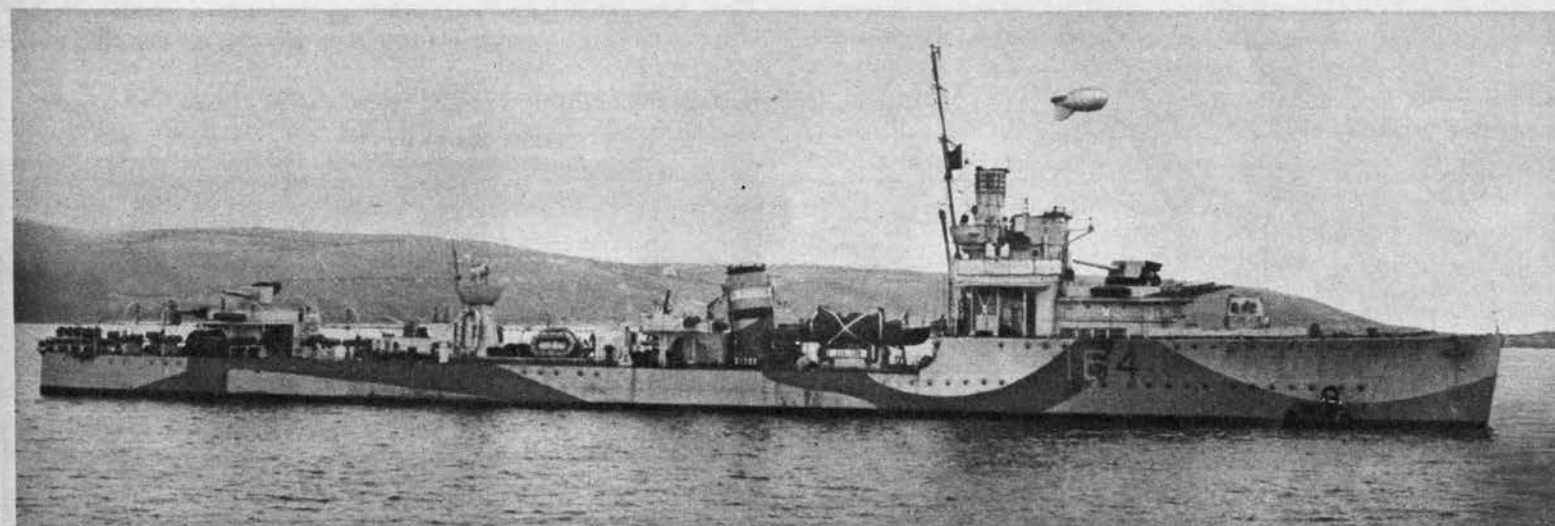
ly broken deck line. Forecastle and after deck are very straight. Ships of this class were first DD's to have superfiring gun positions fore and aft.





**H.M.S. WALKER** is a member of 1917 "W" Class but was rearmed in 1939 for escort service. Her speed is insufficient for fleet duty under

modern battle conditions but is ample for convoy work. Many sister ships have been rearmed with high-angle guns for anti-aircraft duty.



**H.M.S. VANSITTART** is an Admiralty Modified "W" Class ship converted to escort duties. Forward boiler and stack have been removed so

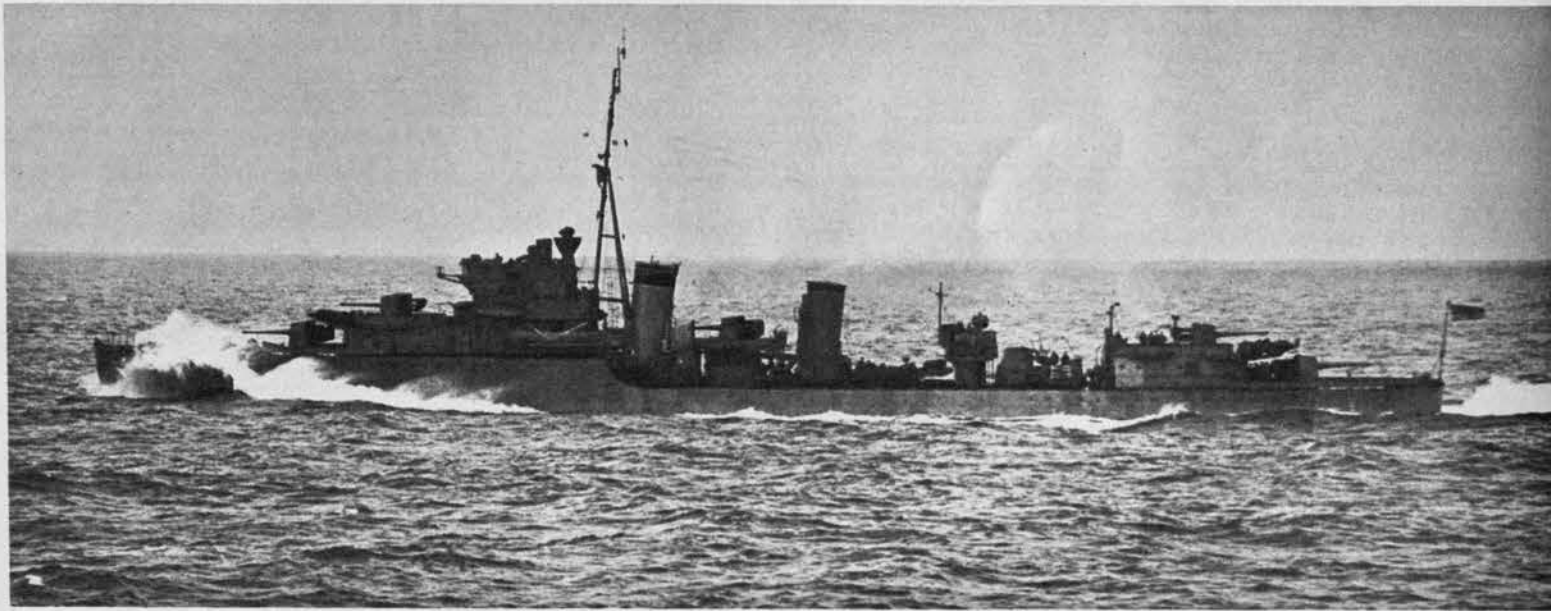
that she now has one very short stack well aft of the bridge. As a one-stacker she differs considerably in appearance from her sister ships.



**ADMIRALTY "S" CLASS** ships like H.M.S. Scimitar have same general personality as "V" and "W" ships. Chief differences are heavier

forestack, lighter armament of "S" Class. Scimitar's original three 4-in. guns have been reduced in favor of heavier antisub armament.





**H.M.S. INGLEFIELD** is a flotilla leader of the Codrington Class completed in 1937. Displacing 1,530 tons, she carries five 4.7-in. guns, five

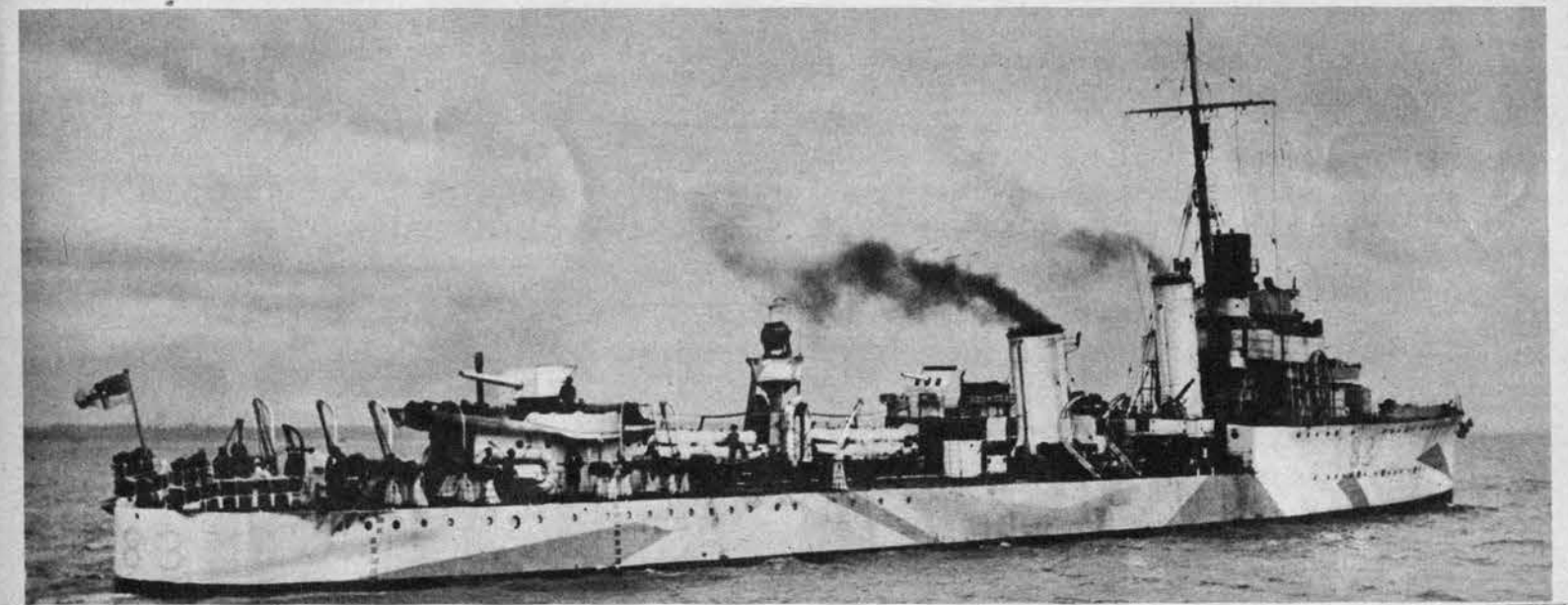
21-in. tubes, at 36.5 knots. Guns are superfiring fore and aft with the fifth gun as a single mount between the squat, square-topped stacks.

**H.M.S. FURY** (below) is typical British DD of "A" to "I" Classes. It has a small displacement (1,350 tons) but is quite fast and well-armed.

**H.M.S. INTREPID** is a rugged example of Britain's finest between-wars DD's. She is a member of the last class built before the Tribals.



**"A" AND "B" CLASS** ships like Antelope (below) were first to mount their torpedo tubes in banks of four, to introduce box-shaped shields.

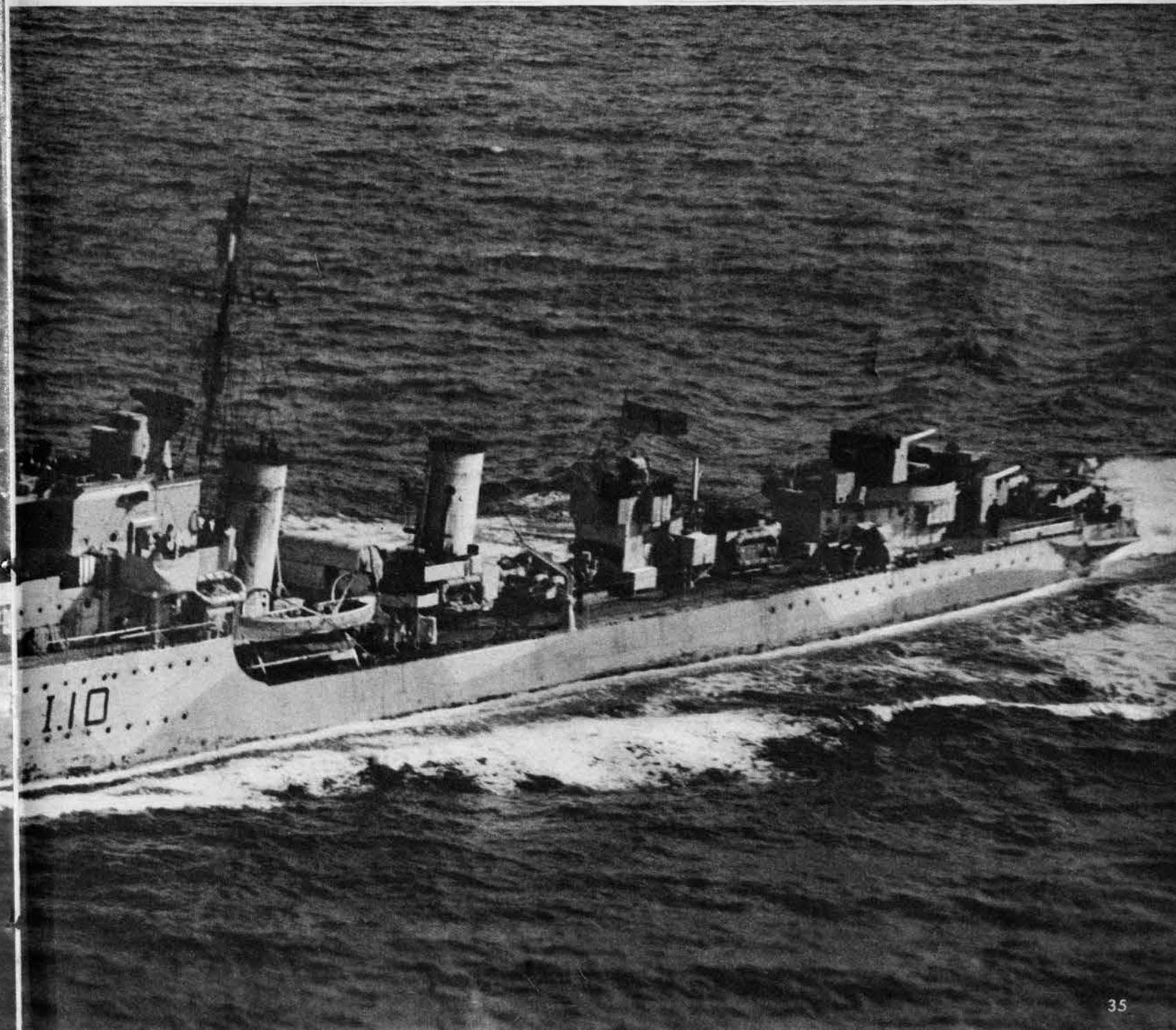


**WALLACE-DOUGLAS-SAGUENAY** recognition group is made up from a number of classes. Larger than their contemporary fleet DD's,

they are usually classed as leaders. H.M.S. Broke (above), a Thornycroft leader, has reduced armament in new role as escort destroyer.

The streamlined bridge, first introduced in these later two-stackers, has been retained in all new boats. Since September 1939, most of the

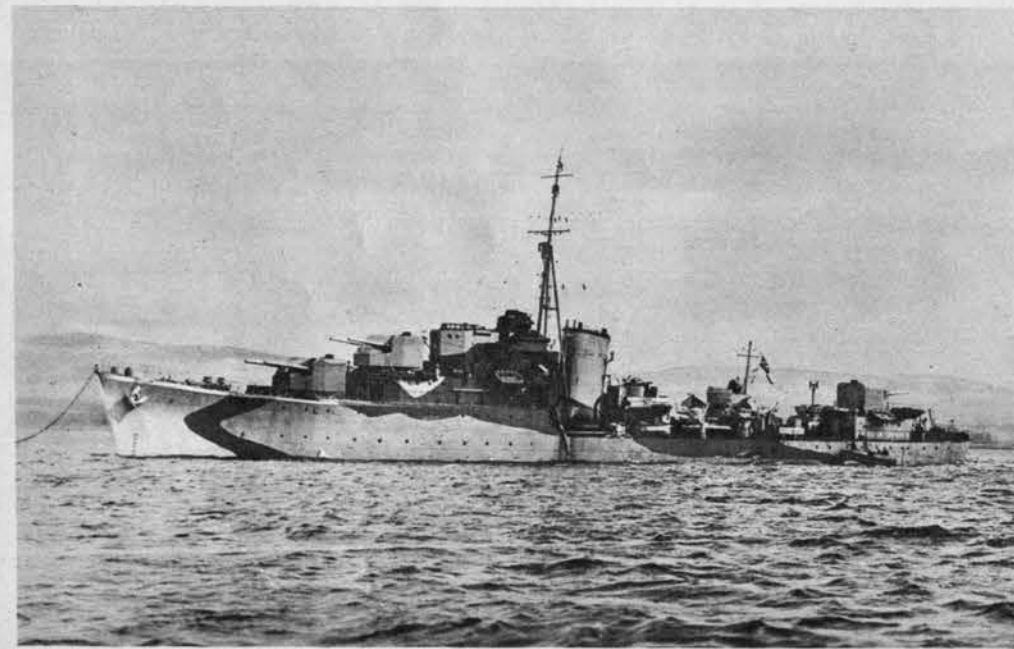
"A" to "I" Class ships have had their second stack cut down, giving them all a superficial resemblance to Admiralty "V-W" Class units.







**BRITAIN'S TRIBAL CLASS DD's** were her answer to the French superdestroyer. They carried eight 4.7-in. guns in superfiring twin mounts forward and aft but only four torpedo tubes.



**POST-TRIBAL BRITISH DD's** have all been single-stack designs. Like Tribals, H.M.S. Maharratta has main battery in twin mounts, is considerably bigger ship than earlier fleet destroyers.



**H.M.S. METEOR** (above & right) is another big World War II DD. Air view shows broader beam, chunkier appearance. Main guns of "L" and "M" Classes are housed in enclosed mounts.



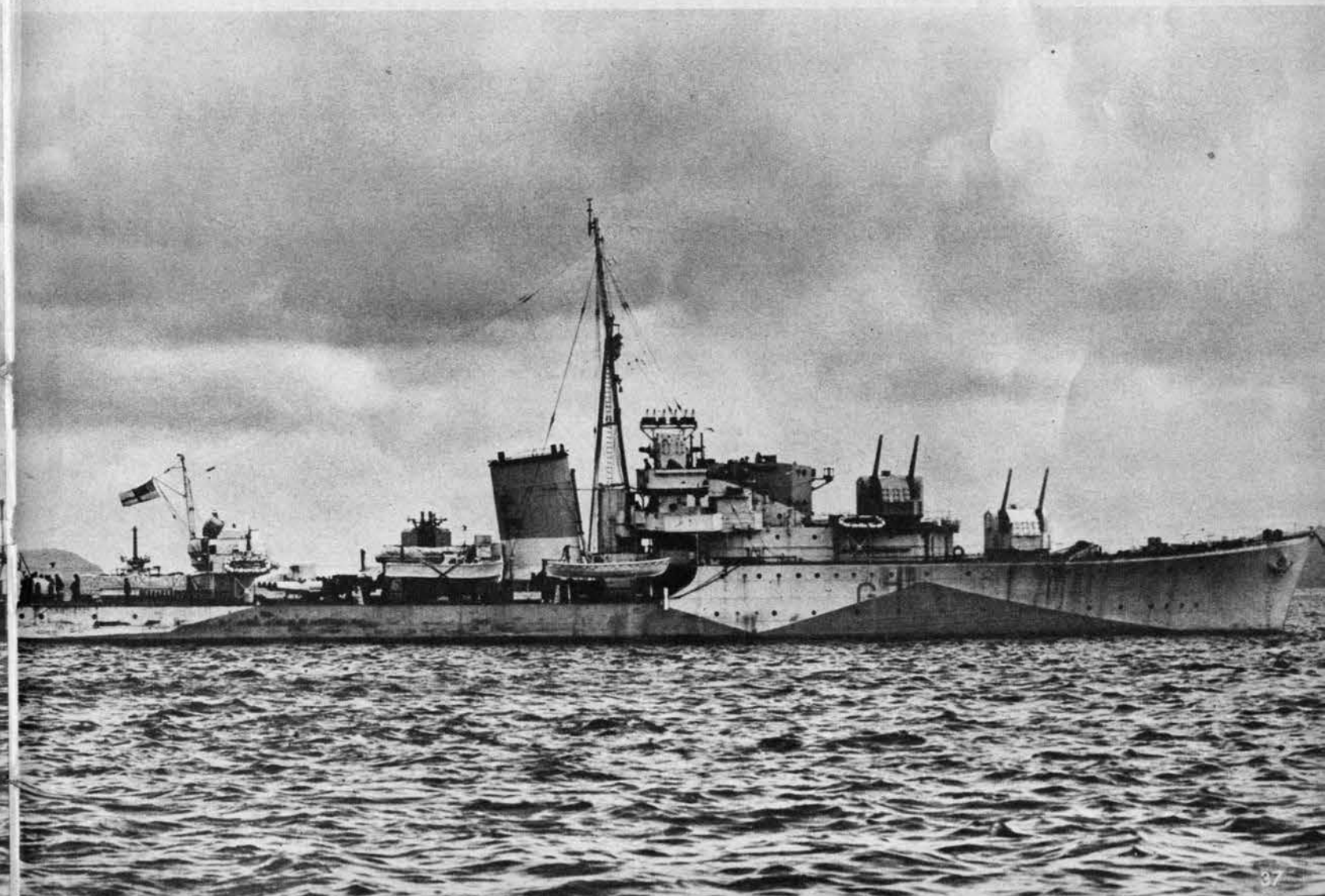
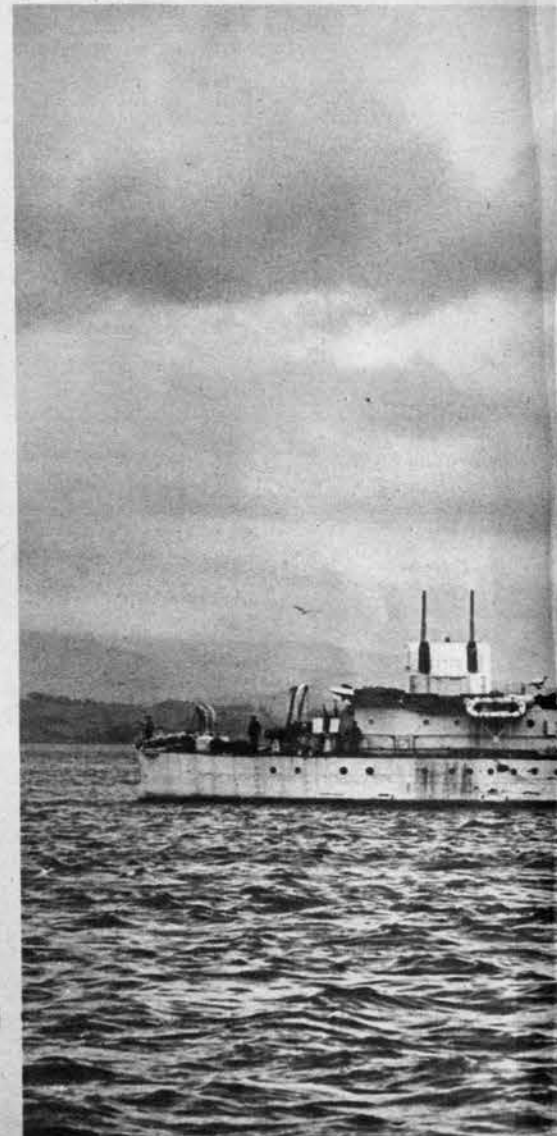
**FAST-MOVING TRIBAL DD** (above) shows clean lines of Britain's newer ships. Bows have



more rake, and bridge shows some streamlining. Mainmast is removed in refitted versions.

**NEATLY SILHOUETTED** H.M.S. Meteor (below) shows her features. Forecastle has definite

sheer. High-angle main battery is pointed at sky. Single squat stack stands close to bridge.







**ITALIAN DARDO CLASS DD's** of 1930's led one-stack trend. Like most newer Italian ships they are beautifully streamlined, looking as

much like yachts as like warships. Twin shielded gun mounts are at upper deck level. Superfiring guns are never found on Italian destroyers.

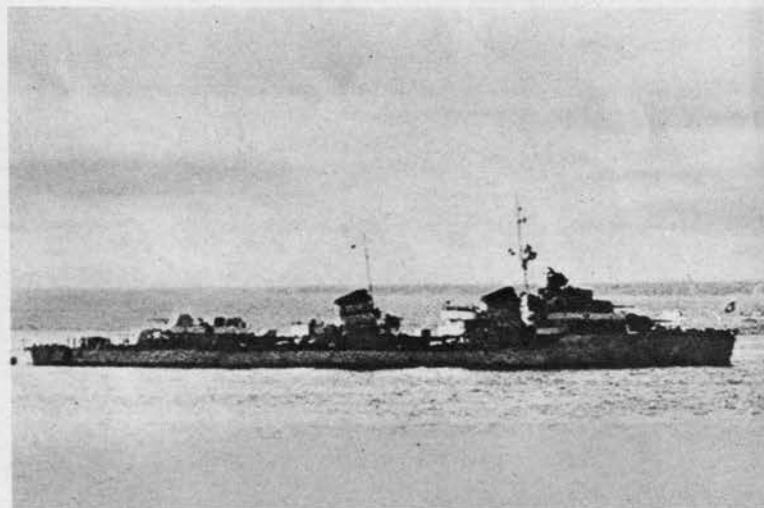
## SUPERDESTROYERS WERE POPULAR IN EUROPEAN NAVIES



**SELLA CLASS** typifies old Italian two-stack DD's. Rounded, smooth-surfaced bridge set close to forestack and long forecastle are features.

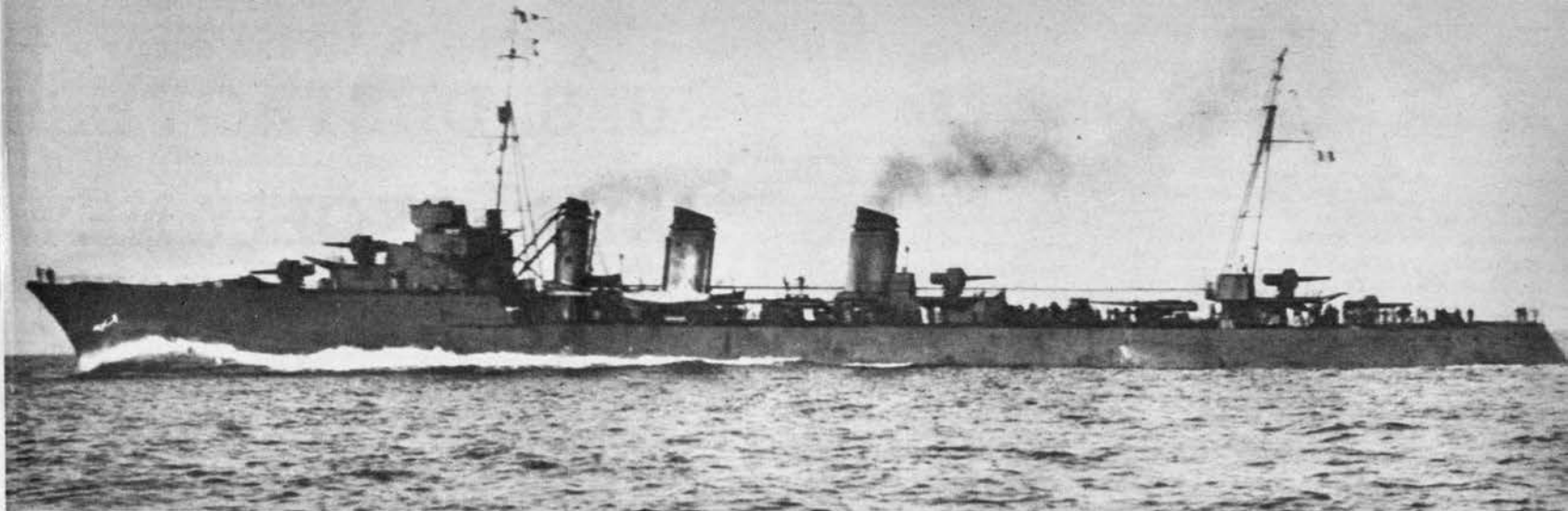


**LENINGRAD CLASS DD's** are big, fast ships (2,900 tons, 36 knots), poor sea boats. Leningrad (*above*) has gun between bridge and stack.



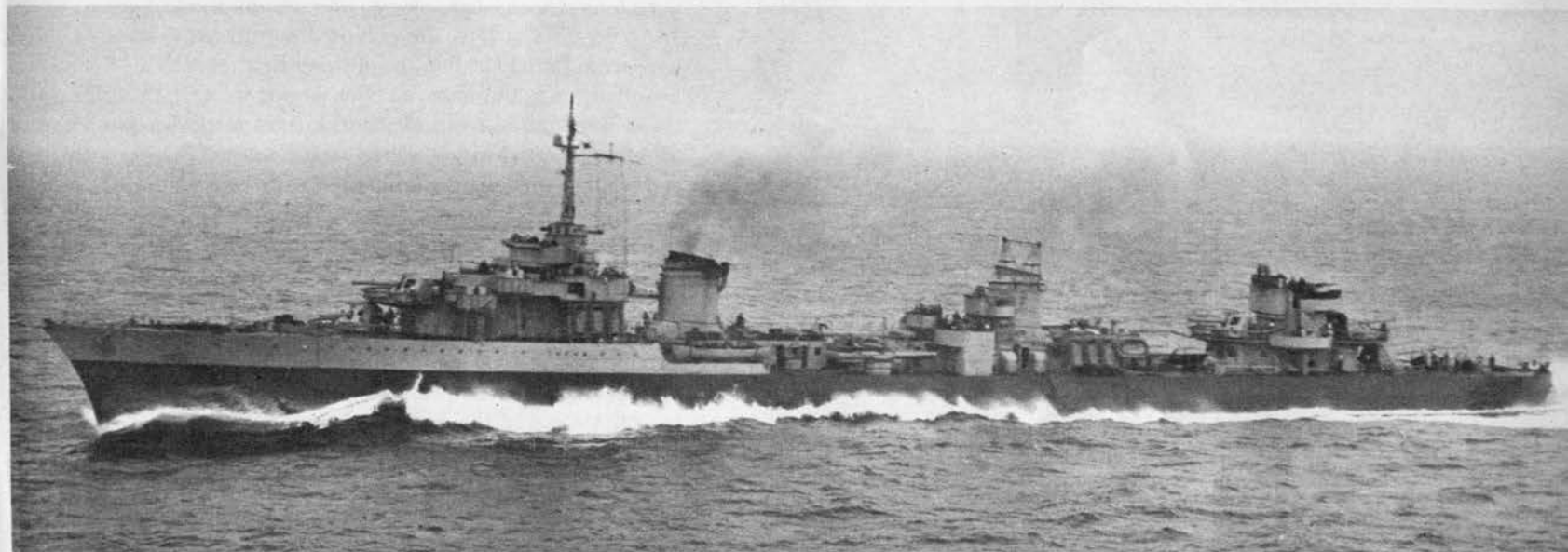
**IMPROVED GORDI CLASS** ship is latest Soviet design. Squat raking stacks create dangerous resemblance to the newest German destroyers.





**FRANCE'S FIRST** superdestroyers were Chacal Class ships like Tigre. They set design through Fantasque. Including later Mogadors, France

built over 30 large and heavily-armed DD's between 1923 and 1937. Stack pattern of Tigre is common to French DD's built in early 20's.



**FREE FRENCH DD** Fantasque, refitted in U.S. yards, is back with the Allied fleets. Fantasque Class ships are large and fast, relatively under-

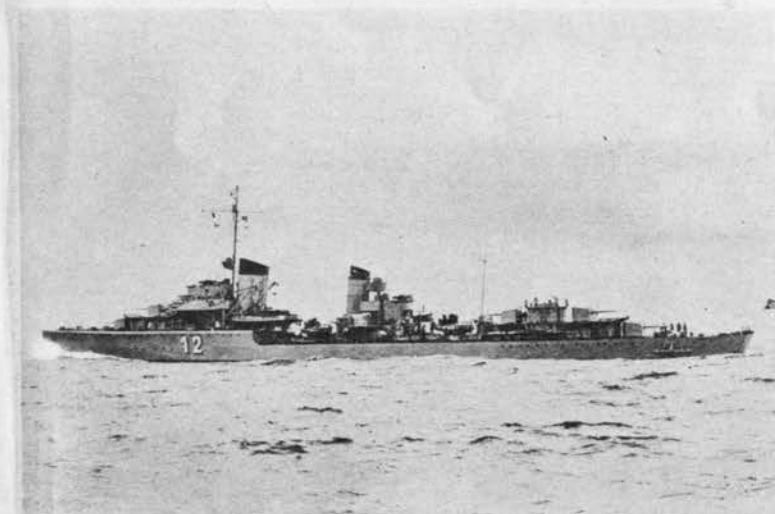
gunned. Seaworthiness is apparent in high freeboard and flared bows. Silhouette is low. Five 5.5-in. guns are arranged two forward, three aft.

**A**n interesting diversion from the general trend of destroyer design during the period between 1920 and 1935 was the superdestroyer. This was chiefly a French development. Between 1923 and 1937 the French launched over 30 DD's with displacements ranging from 2,126 to 2,884 tons, speeds from 35.5 to 38 knots and gun batteries from five 5.1-in. guns to eight 5.5-in. Just why these were built is a matter of argument but the Germans and Russians were stimulated to imitate them. Even the British built the Tribal Class to offset the threat from the Continent.

Though the French superdestroyers had great speed and gunpower, they had no more protection than smaller ships. As rival

navies built large, heavily-gunned DD's, the superdestroyer lost its advantages of speed and gunpower and became just an over-expensive DD. In the years just before the war there was a general return to smaller ships; French tactical thought swung to lighter destroyers of Le Hardi type with their 1,772-ton displacement and six 5.1-in. guns.

Modern German and Russian destroyers are basically copies of earlier French superdestroyers. They have a distinctly national architecture in hull and superstructure lines but otherwise do not vary widely from trend of destroyer design. Italy has largely followed British thought in sticking to genuine fleet destroyer.



**GERMAN DD MAX SCHULTZ** is in 1,625-ton Maasz Class. Heavy separated stacks with high cinder-screens, long forecastle are typical.



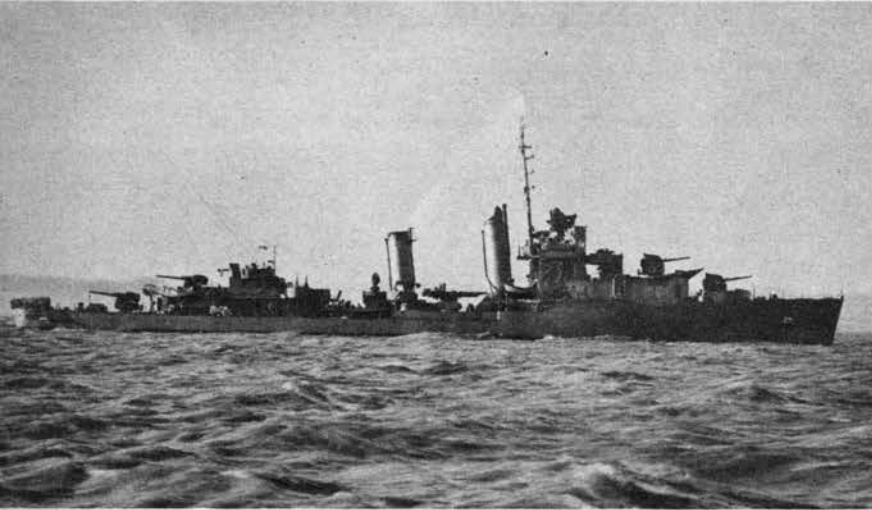
**NARVIK CLASS** is Germany's finest, mounts four or five very big guns, up to 5.9-in., they probably exceed designed speed of 36 knots.



# U. S. DESTROYERS ARE LARGELY NEW



**MACDONOUGH** of the Farragut Class looks like the pre-war British DD's. Unequal square-topped stacks, straight deck lines are typical.

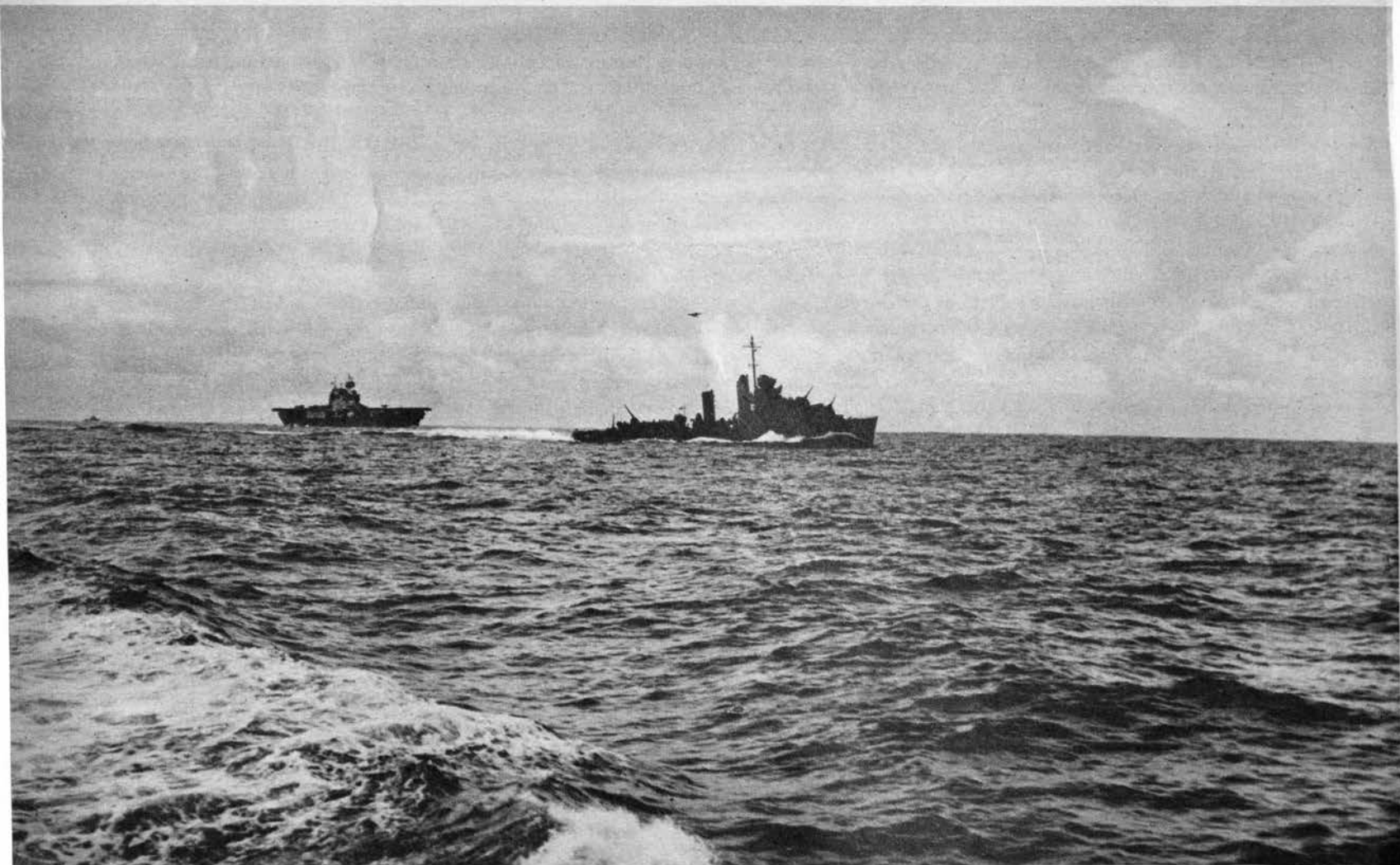


**MAHAN-DUNLAP CLASS** set appearance of U. S. two-stack DD's through Benson-Livermores. Cowling is often fitted to forward stack.

**T**he modern U. S. destroyer fleet is almost entirely the product of the last ten years. When the World War I building program ended, with the completion of the Wickes and Clemson Classes in 1922, American destroyer construction went into a moratorium of about ten years. It was not resumed until the building of the eight units of the Farragut Class in 1931-35.

The Farraguts broke the trend of American design as evidenced in the first World War, turned toward British types. After the Farragut Class came varying types as American designers experimented with engineering, hull design and armament ideas. In the 1937 Dunlaps the enclosed mount, now standard, first appeared. In the Gridley, Bagley and Benham DD's 16-tube torpedo batteries, the heaviest ever mounted, were tried. Torpedo tubes were raised from main deck level to positions on top of deckhouses. And in the Porter and Somers Classes, with their eight 5-in. guns, we experimented with heavy gunned answers to the British Tribal and French Mogador Classes.

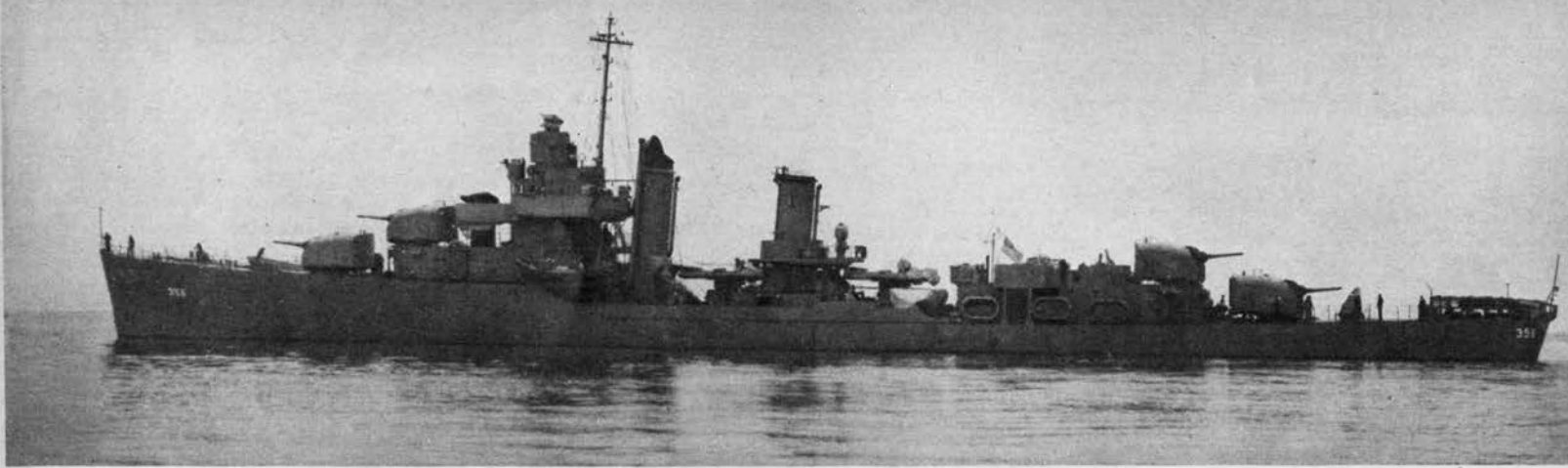
The experience gained through this wide variety of designs found its best expression in the development of our most modern ships, the Benson through Sumner Classes. These ships are somewhat smaller than the superdestroyers of the Continental nations but are big enough to carry a well-balanced gun and torpedo armament. With their power and speed these ships are fully the equal of the Japs' Terutsuki and the German Narviks.



**MAHAN CLASS DD** screens carrier Yorktown as F4F's leave deck in Battle of Santa Cruz. Chief distinction between Mahan and Dun-

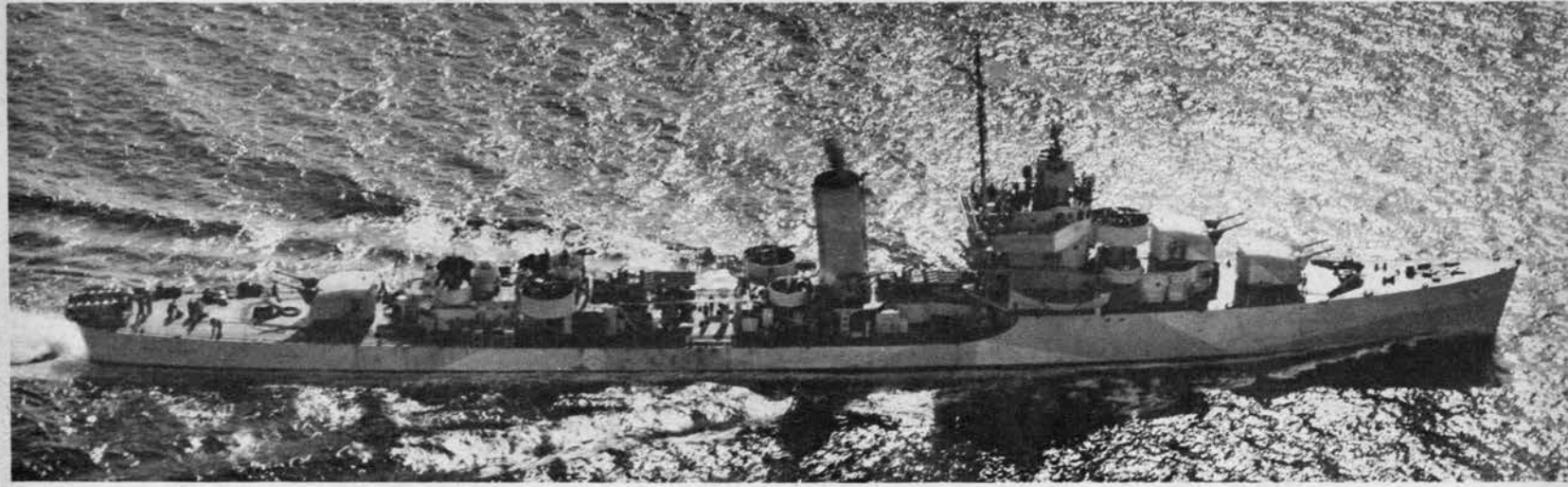
lap Classes is forward armament. Mahans have open gunshields, Dunlaps have gunhouses. In both classes, after guns are in open mounts.





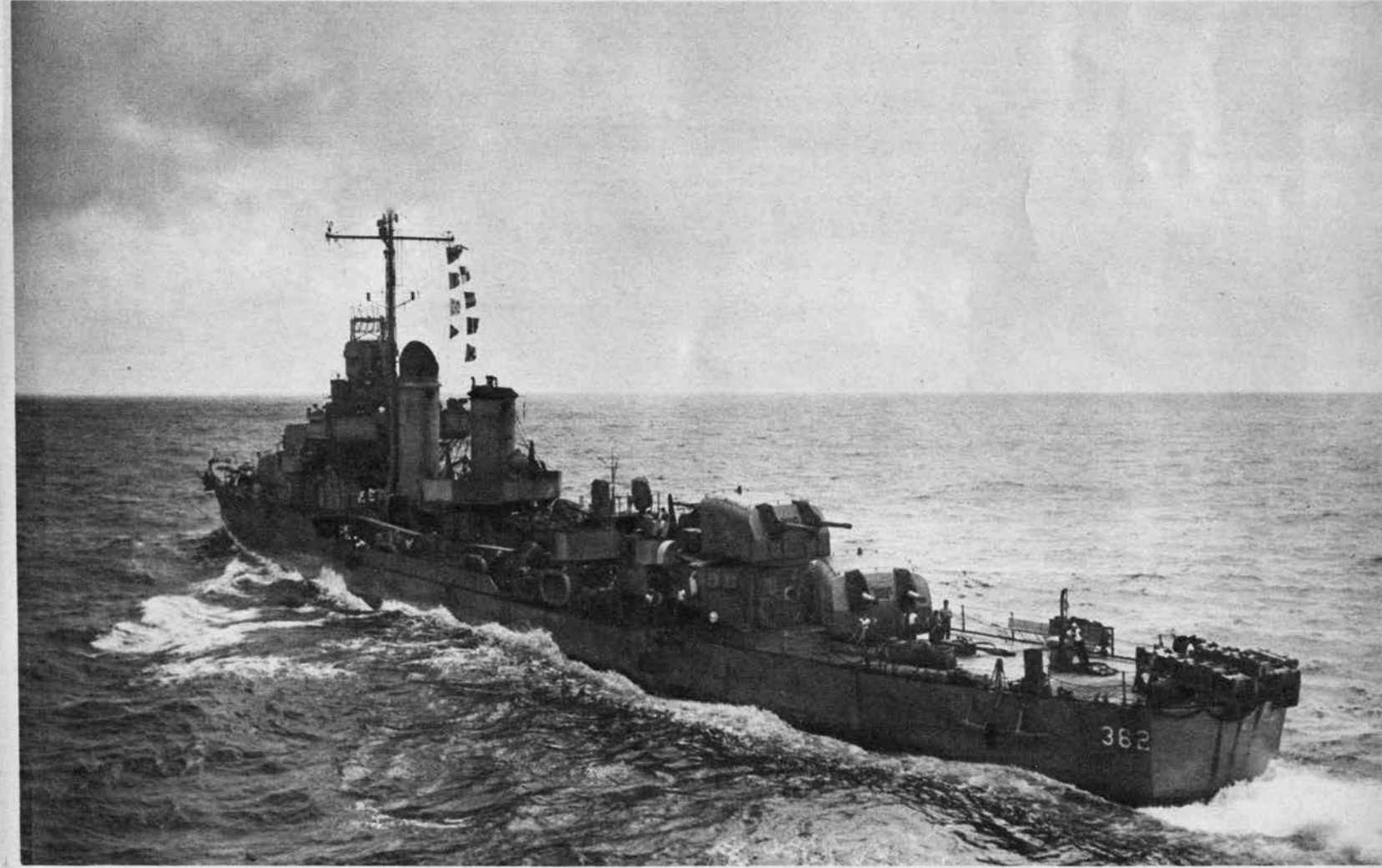
**HEAVIEST-GUNNED** American destroyers were the Porter and Somers Class leaders. Originally both had eight 5-in. guns in twin mounts.

U.S.S. Porter (*above*) shows chief features of design: stacks set close, sheered foredeck, straight afterdeck, superfiring guns fore and aft.



**SOMERS CLASS** leaders have a single stack. War refits have changed armament on some units. U.S.S. Sampson (*above*) has sacrificed one

twin 5-in. mount for increased anti-aircraft protection aft. Hull form, deck lines, armament disposition closely resemble Porter Class ships.



**PORTER CLASS** U.S.S. Moffett shows long afterdeck and formidable gunhouses. Most U.S. destroyers have higher bridges and stacks than

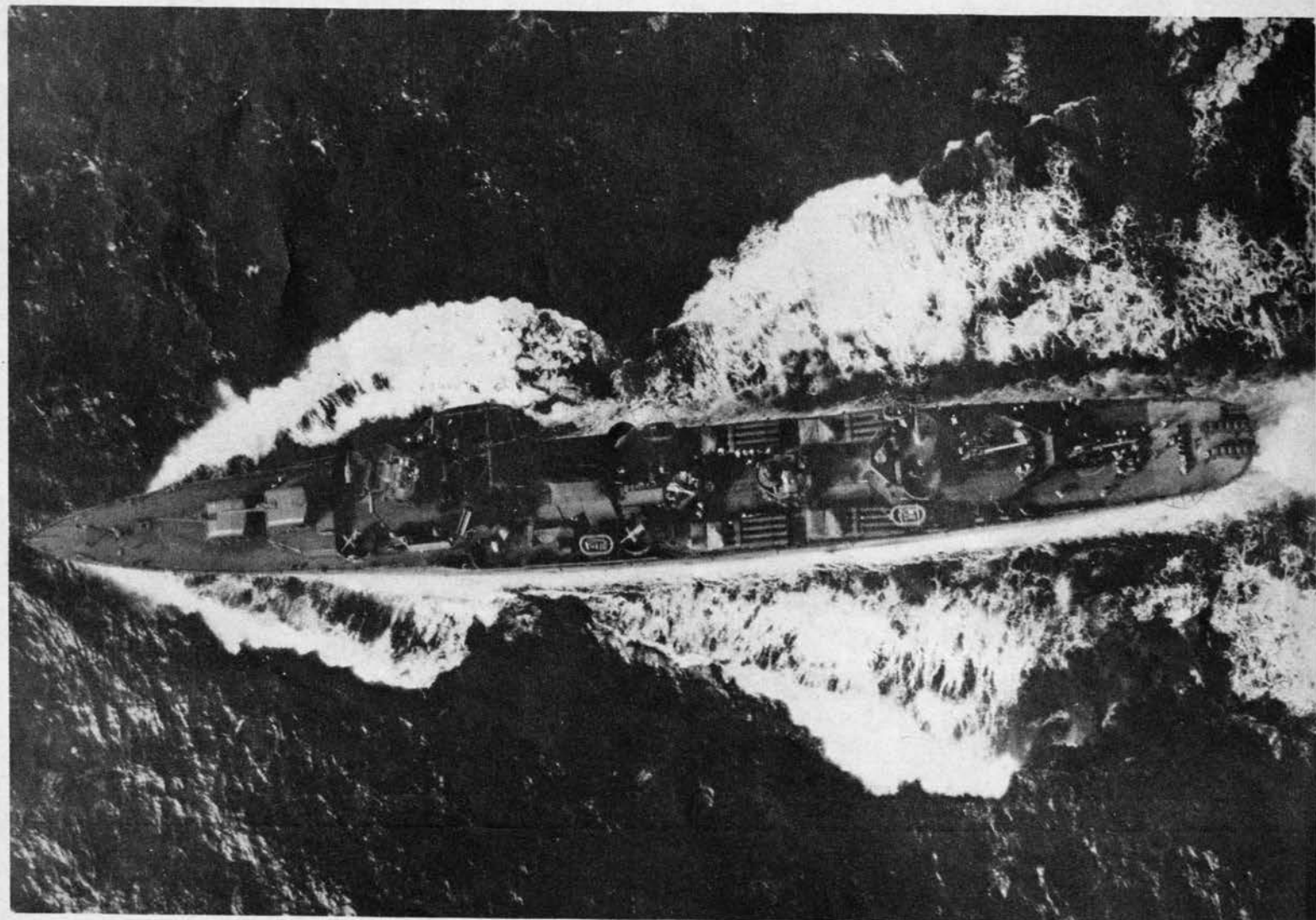
comparable British ships. There is less freeboard forward and break in deck is less pronounced. Porters and Somers are fast seaworthy ships.





**ONE-STACK DESIGNS** dominated U.S. destroyer construction from 1937 to 1939. Besides Somers Class leaders, four classes of fleet DD's

—Gridley, Bagley, Benham, Sims—had single funnels. Gridley, Bagley Classes have trunked stacks; Benham and Sims have clean funnels.



**TORPEDO ARMAMENT** of Gridleys, Bagleys, Benhams was greatest ever mounted in single ship—16 tubes. Gridley Class DD (*above*)

also shows a transitional design in that forward guns are enclosed, aft mounts open. AA pattern shown here may vary from ship to ship.





**U.S.S. RHIND**, Benham Class DD, shows same clean lines as succeeding two-stack Benson-Livermores. Benham was the first U.S. design to

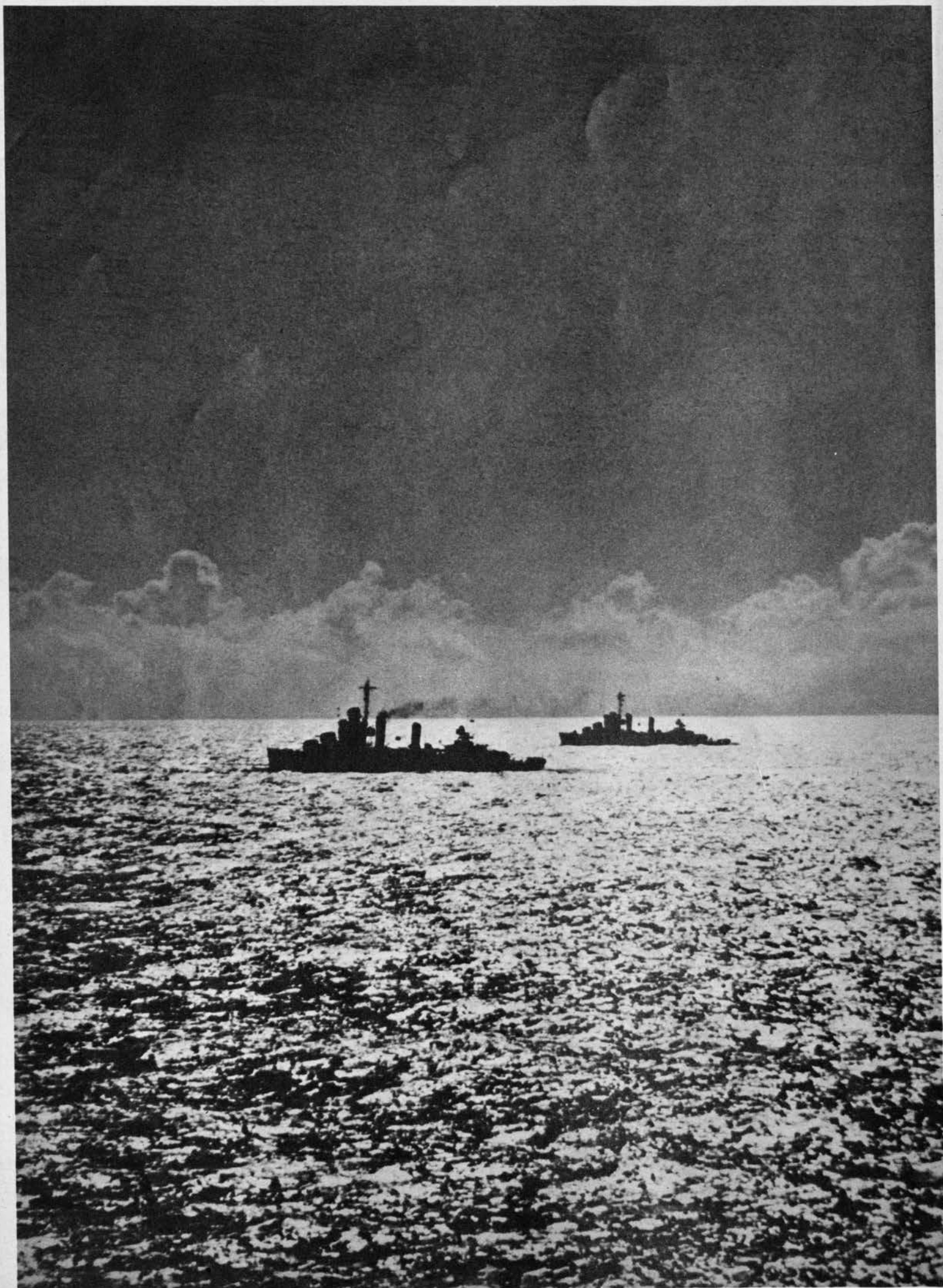
have all principal guns in enclosed mounts. Use of gunhouses permitted designers to eliminate blast shield between upper and lower guns.



**U.S.S. HELM** shows split trunk which helps distinguish Bagley Class from the similar Gridley Class boats. U. S. fleet destroyers of the late

1930's averaged about 1,500 tons displacement, 36½ knots, carried on U.S. World War I policy of exceptionally heavy torpedo batteries.

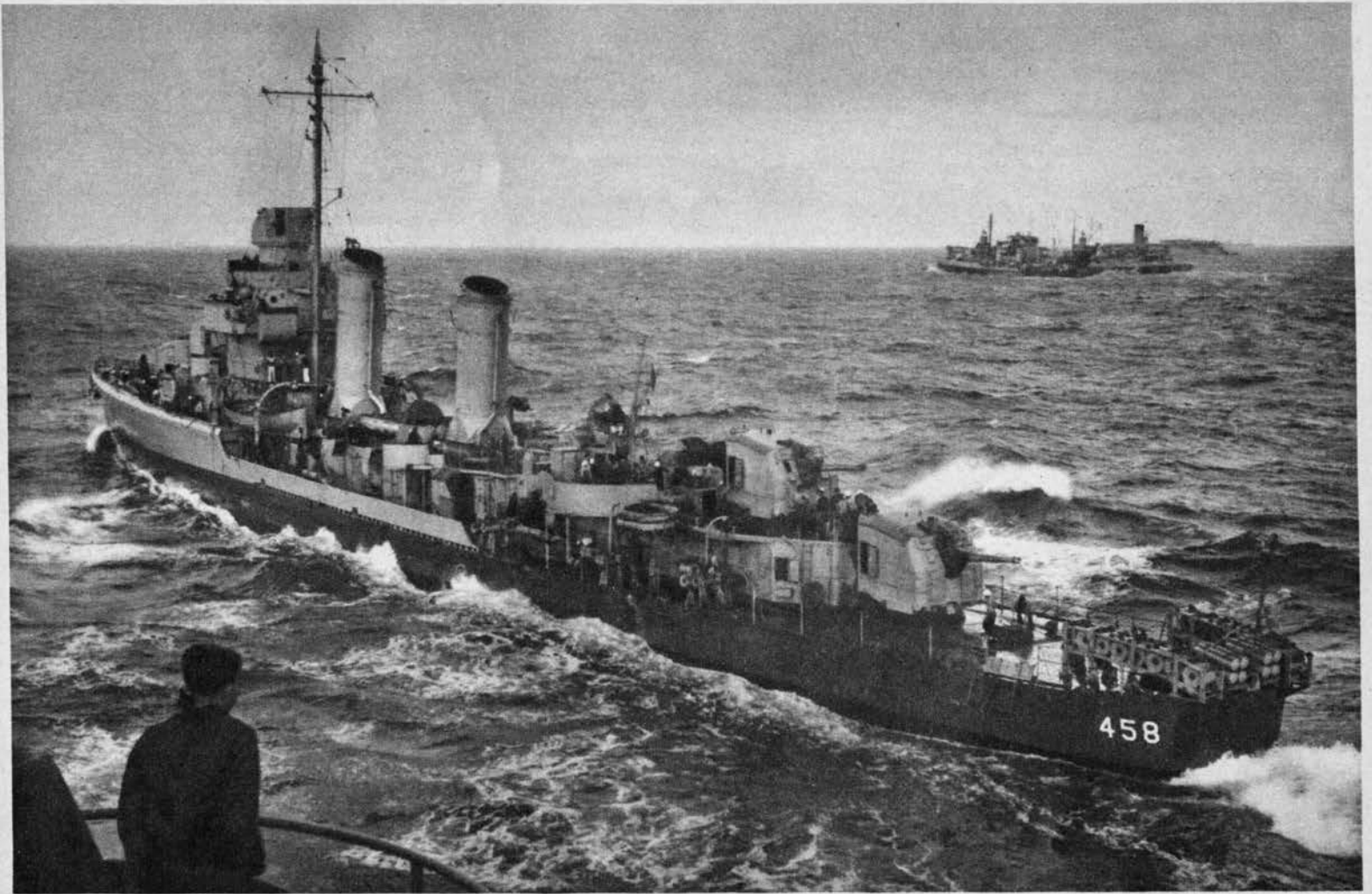




**U.S.S. PLUNKETT** (*left*), shown in striking silhouette, is a Livermore unit, while U.S.S. Niblack (*right*) belongs to the Benson Class. First-

built Bensons had squared, flat-sided stacks. Livermores, and all units built after the design was set for mass production, have round stacks.





**U.S.S. MACOMB** is refueled at sea. In background, another Benson-Livermore is alongside an oiler, with a CVE and oiler beyond. Stand-

ard U.S. destroyer in 1940-1941, this class has been superseded by Fletcher and Sumner Classes. Benson-Livermores remain good ships.



**AERIAL VIEW** of Benson-Livermore shows battery disposition of two gun-houses forward, two aft. Armament varies among individual ves-

sels in this class. First units had five 5-in. guns, but in 1941 No. 3's were removed from the aft superstructures to provide AA positions.

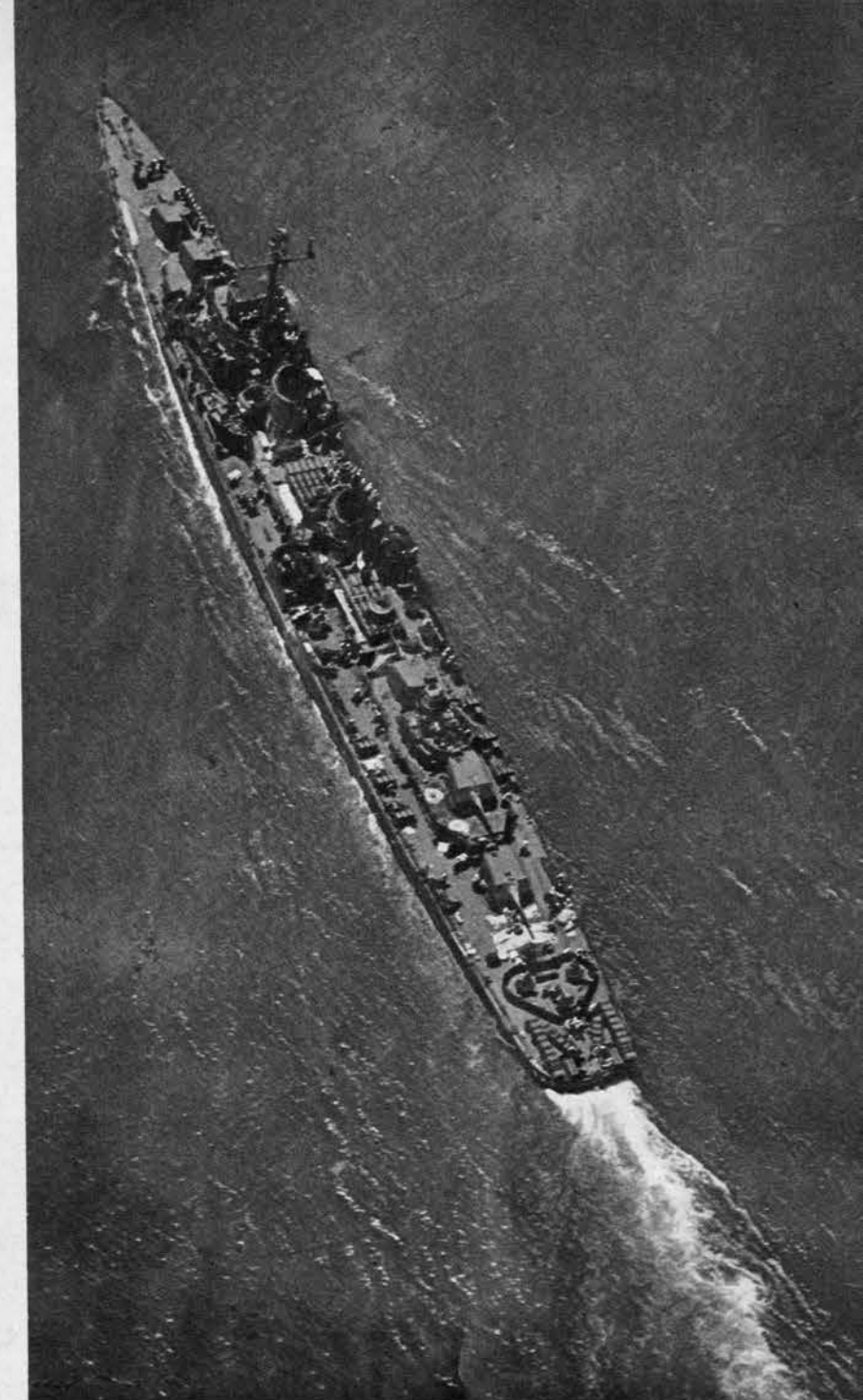




**MAINSTAY OF U.S.** destroyer fleet since the beginning of the war has been the big Fletcher Class, some of the best fighting ships of the

war. This beautiful photograph of U.S.S. Cassin Young shows all her characteristic features. Fletchers and newer Sumners mark a return

to flushdeck hull and are the only combatant DD's so built. Fletchers' main armament is five enclosed guns—two forward and three aft.

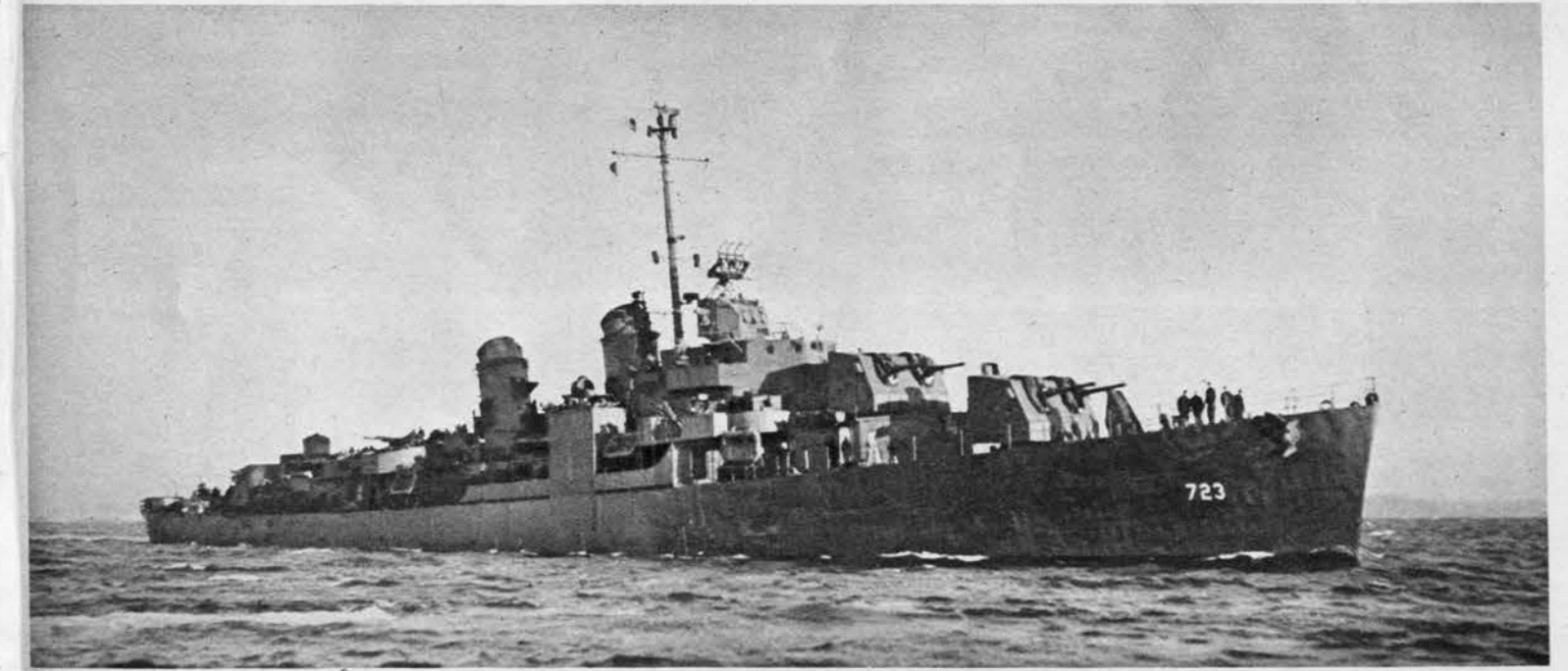


**AERIAL VIEW** of U.S.S. Trathen shows two quintuple banks of torpedo tubes mounted on deckhouse, also characteristic broad fantail.



**FLETCHERS' STACKS** are broad, separated. Their lines are broken by searchlight platforms, control stations, in contrast to clean-stacked

Benson-Livermores. Profile of typical Fletcher is further confused by the welter of auxiliary equipment necessary to fight a sea-air war.

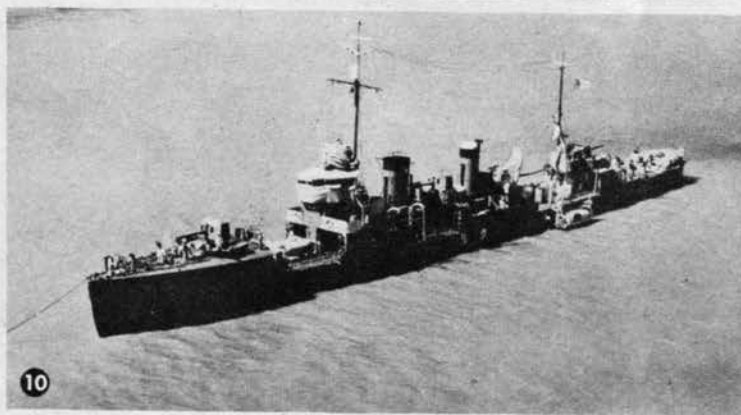
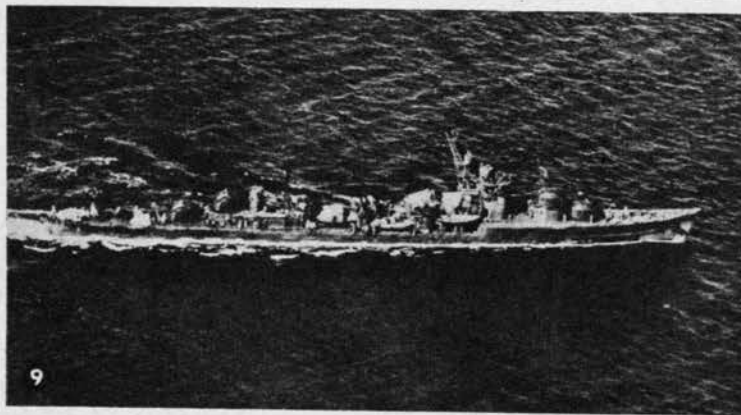
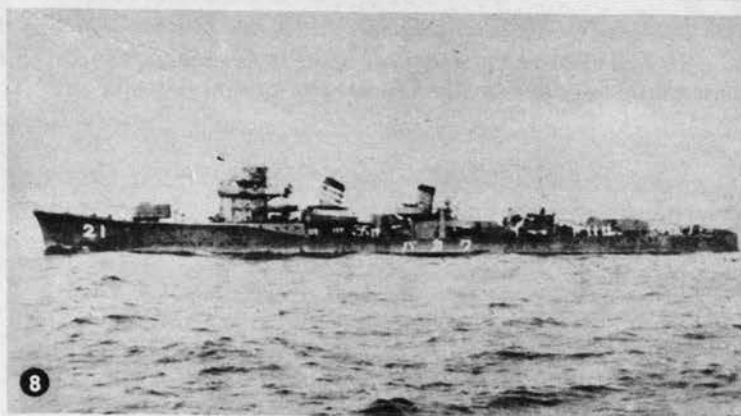
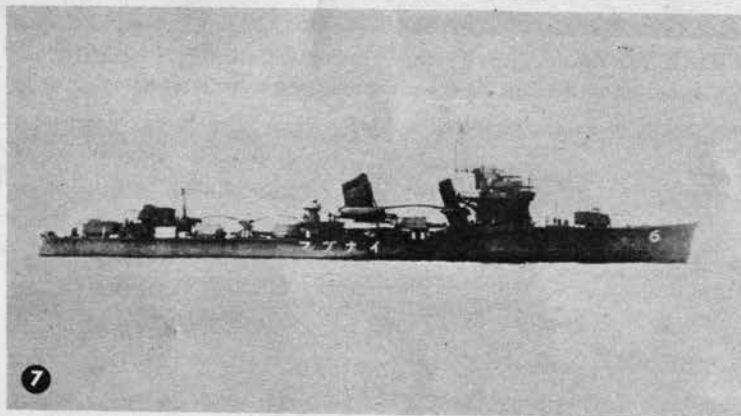
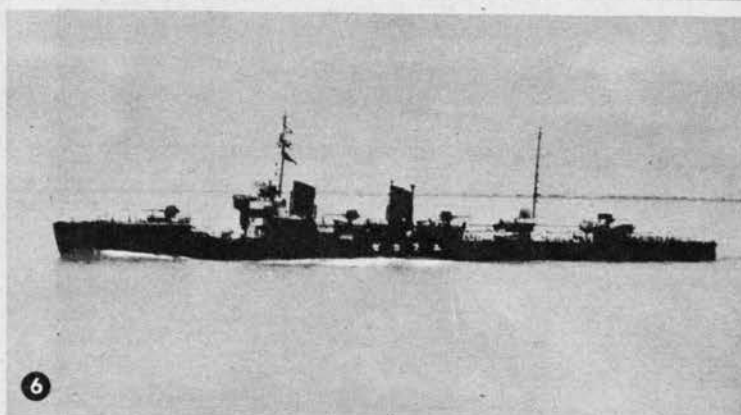
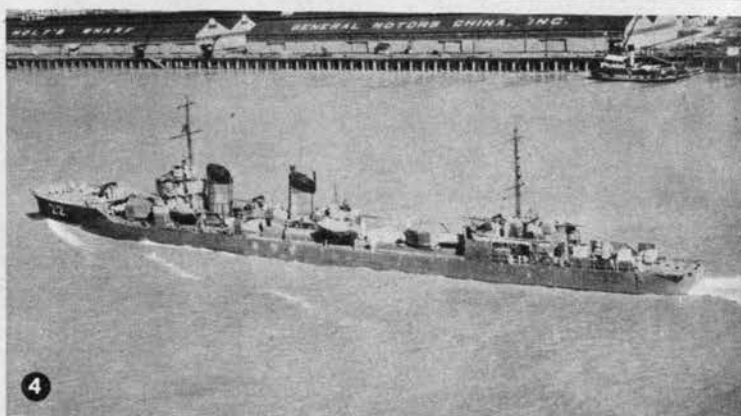
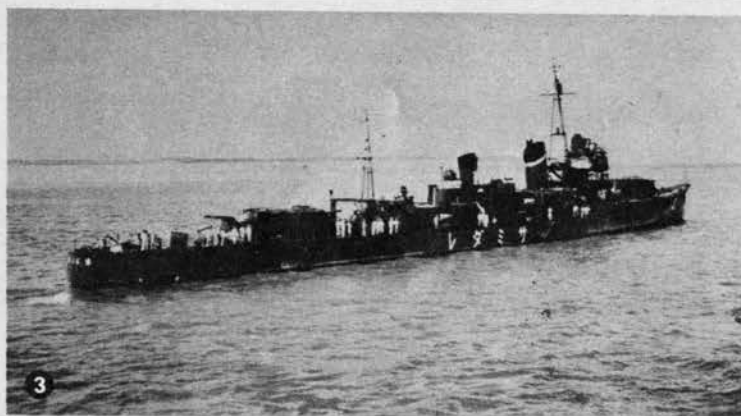


**SUMNER CLASS DD** Walke is last word in U.S. destroyer design. Improved Fletchers, these ships have a similar profile except for con-

tinuous deckhouse, different armament. Sumners have six guns in two twin mounts forward, one aft. Sumners also have slightly greater beam.



# QUIZ NO. 3: JAP DESTROYER CLASSES





# QUIZ NO. 4: VARIED MECHANIZED EQUIPMENT



For answers, see p. 50



# NEWS & MISCELLANY

## NEWS

The new Japanese Escort Gunboat PG(E)-1 Class (*see cut*) has a prominent bridge, squat stack set close abaft light raking tripod foremast, and an upright mainmast with long boom stepped-on the after deck-house. The class also has a relatively high freeboard and wide beam. There is a twin-shield mount forward and open twin mount aft.

The P-51D incorporates several modifications on the current P-51B and C, including increases in power and armament along with the new bubble type pilot enclosure. The P-51D will join the P-51B and C in high-speed, long-range operations over Germany.

The new Japanese battleship class called the Yamato is known to consist of two units, the Yamato and the Musashi. The Yamato is estimated to be 870 ft. over-all, with a beam of 139 ft.

For the past several months the He-177 has become increasingly operational. It has been found to have two DB-610 engines (DB-605 doubled) with a rating of 2800 hp. for each engine. The maximum bombload has been increased to 2,200 lb. and the top speed is in excess of 300 m.p.h. When carrying its maximum bombload the range is very limited but with maximum fuel and a light bombload a range of approximately 3,500 miles can be obtained. At the present time the He-177 is the major German heavy bomber threat against land targets.

The new Ju-188 is a twin-engine, low-wing monoplane, primarily intended for horizontal and divebombing. The fitting of BMW-801G engines has increased the top speed to 325 m.p.h., a substantial improvement over the Ju-88A. The maximum bomb capacity has not been definitely established but is believed to be about four tons. Normal armament consists of 1x20-mm. forward guns, 2x13-mm. top guns and 2x7.9-mm. belly guns. The Ju-188 has been used extensively by the GAF on their recent bombing raids.



PHOTO TAKEN AT RABAUl DURING NOV. 2 RAID REVEALS DETAILS OF PG(E)-1, JAP'S ESCORT GUNBOAT

## SOURCE MATERIAL

### ONI (Restricted Publications)

The forthcoming Axis Submarine Manual, ONI 220 is divided into four parts:

- G—German Submarines
- GE—German Equipment
- J—Japanese Submarines
- JE—Japanese Equipment

ONI 223-D includes a general discussion of mine warfare.

## CORRECTIONS

Correction to be made in Recognition Pictorial Manual of Naval Vessels (FM 30-50): Japanese Naval Vessels, Simplified Silhouettes, Japanese Light Cruisers—Sendai Class should be Katori Class; Katori Class should be Sendai Class.

Corrections to Supplement Slide List "J" Slides

- |                  |  |
|------------------|--|
| 2566 }<br>2567 } | U. S. AKV (this type is also used to transport landing craft but, to avoid confusion with landing craft control, the symbols LCC should not be used) |
| 2597             | U. S. PCE—Patrol Squadron  |

Quiz answer number 7 for Quiz No. 4 on page 51 of the April issue should be corrected to P-63. The squaring of the lower section of the rudder should be noted in the photograph.

## DISTRIBUTION

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## QUIZ ANSWERS

### QUIZ No. 1:

1. A-36 Invader
2. Val I
3. Spitfire IX
4. P-47
5. Hurricane IID
6. Me-109F
7. FW-190
8. Spitfire IX
9. P-51 Mustang
10. Hurricane IID
11. Zeke
12. P-51B
13. P-47
14. P-39
15. F6F Hellcat

### QUIZ No. 2:

1. PV Ventura
2. F4U Corsair
3. SB2C Helldiver
4. Wellington
5. Stirling
6. B-24 Liberator
7. Beaufighter
8. Ju-52
9. Hurricane
10. Zeke
11. B-17 Fortress
12. Kate
13. F6F Hellcat

### QUIZ No. 3:

1. Fubuki (Amagiri group)
2. Chidori-Otori (TB)
3. Shigure
4. Mutsuki
5. Asashio
6. Minekaze
7. Fubuki (Hibiki group)
8. Hatsuharu
9. Terutsuki
10. Momi-Wakatake

### QUIZ No. 4:

1. Nazi PzKw III tank with armored skirting. Soviet T-34
2. U. S. M-4, Sherman
3. Nazi 8-wheeled Armored Car
4. British Universal Carrier
5. Battered Nazi PzKw IV. U.S. M-10 Self-propelled 3-inch Gun
6. Nazi 75-mm. SP Gun on PzKw III tank chassis
7. British Humber Armored Car
8. Nazi Medium Half-track Personnel Carrier
9. Nazi PzKw III tank
10. U. S. 105-mm. How. Motor Carriage, M-7, Priest

## CREDITS

The pictures used in the *Journal*, unless otherwise specified (*see below*) came from the Allied Armed Services.

- 3—Frank Scherschel
- 12—Top left, Int.
- 22—Top, Margaret Bourke-White
- 23—Eliot Elisofon
- 24, 25—Bottom cen., A.P.
- 25—Top right, European; right cen., A.P.
- 33—Top, British Official
- 34—Top & left cen., British Official

- 34, 35—Bottom right, British Official
  - 36—Second row left, British Official
  - 38—Bottom left & right, Int.
  - 39—Cen., A.P.
  - 49—Second row, Eliot Elisofon, Int., British Official. Third row left, Eliot Elisofon; cen., Acme. Bottom row, A.P., Acme, Int.
- Abbreviations: A.P., Associated Press; Int., International



NIGHT INTERCEPTOR  
FIGHTER



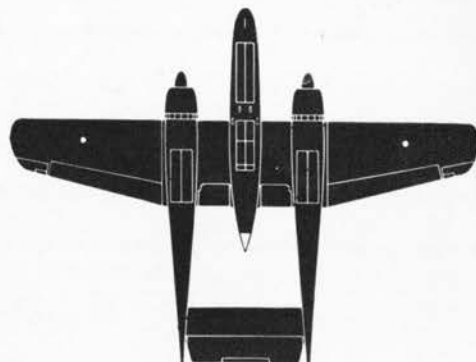
**DISTINGUISHING FEATURES:** This high-wing, long-nosed monoplane has two radial engines and twin tailbooms running aft from each fat engine nacelle. The wing has a straight leading edge. The outboard panel has a tapered trailing edge and no visible dihedral. The P-61's straight, boxy tailplane ends flush with the tailbooms and has cutouts to permit rudder clearance. The glazed greenhouse and full belly of the crew nacelle plus a minimum of straight lines give the plane a wavy, bulging appearance from abeam.

**INTEREST:** This new night interceptor-fighter, built by Northrop, is about to go into action with the Army Air Forces. The P-61 is appropriately nicknamed "Black Widow" after the voracious spider. A high-speed craft at medium altitudes, the Black Widow is the first U. S. radial-engine twin-boom fighter. Glassed-in dorsal and rear sections of the long gondola give the airplane's three-man crew excellent visibility. In head-on view the Black Widow is very similar in appearance to the B-25 Mitchell bomber.

APRIL 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-10  
NAVY DEPARTMENT BUAE 3

P-61



SPAN: 66 ft.  
LENGTH: 48 ft., 11 in.  
APPROX. MAX. SPEED:  
SERVICE CEILING:

**RESTRICTED**

**NOTE:** This page is to be cut along dotted lines (*above and below*), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

TROOP TRANSPORT  
GLIDER TUG



**DISTINGUISHING FEATURES:** The Albemarle is a twin-engine, twin-tail midwing monoplane with the typical British boxcar-shaped fuselage. The wing tapers sharply from a very wide chord at the root and in head-on view has a marked dihedral starting at the fuselage. The fuselage is bulky and has a long-glazed nose and raised cockpit canopy, sometimes with turret aft. An unusually large glassed-in aftersection is close to and below the tailplane. Smooth lines of the oval twin fins and rudders are broken at the bottom fore

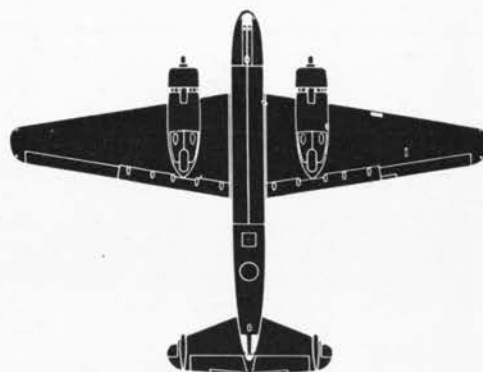
edge. The whole tail assembly is set high on the fuselage. Landing wheels are only partially retractable into the after end of the nacelles.

**INTEREST:** The Albemarle is the RAF's counterpart of USAAF's C-53, and the first large British aircraft with tricycle undercarriage. Originally designed as a medium bomber, it went into production in 1940, has since been used to transport troops and mail, and as a glider tug. It carries a crew of five in an armored cabin.

APRIL 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-10  
NAVY DEPARTMENT BUAE 3

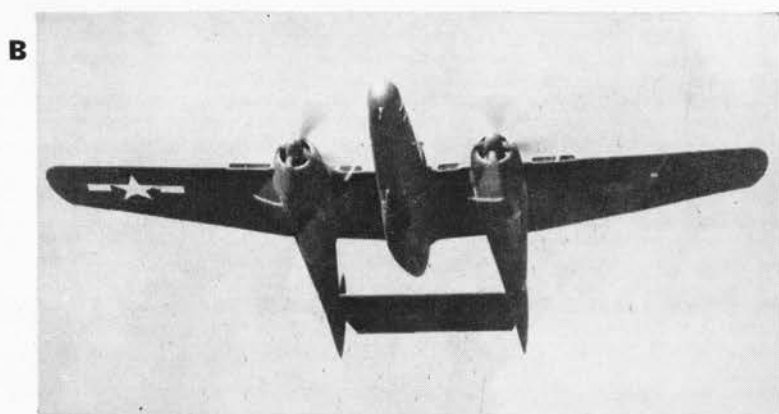
ALBEMARLE



SPAN: 77 ft.  
LENGTH: 59 ft., 10 in.  
APPROX. MAX. SPEED: 265 m.p.h.  
SERVICE CEILING:

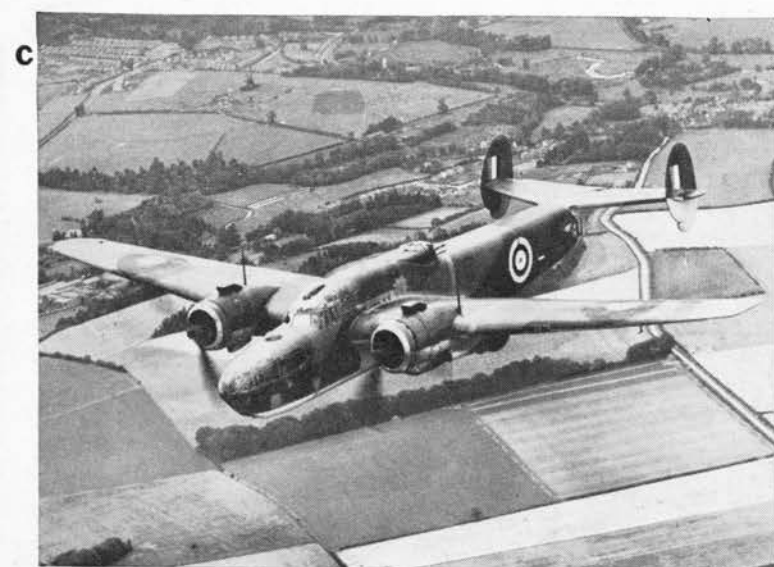
**RESTRICTED**





↑ **SECOND TWIN-BOOM** U. S. fighter to go into action, the P-61 only slightly resembles its famous cousin, the P-38. Designed for night work its long nose is packed with special detection equipment. It is the third U. S. fighter having tricycle landing gear.

↓ **THE ALBEMARLE**, Britain's troop-carrying counterpart of the C-53, was designed by Armstrong Whitworth. For transport duty a large freight door is fitted into side of fuselage aft of wing. Albemarle was one of the first airplanes to land Allied forces in Sicily.





# RECOGNITION

JOURNAL



CONVOY



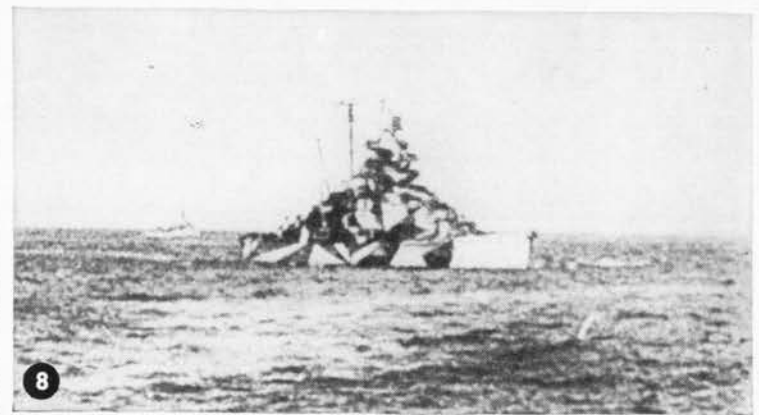
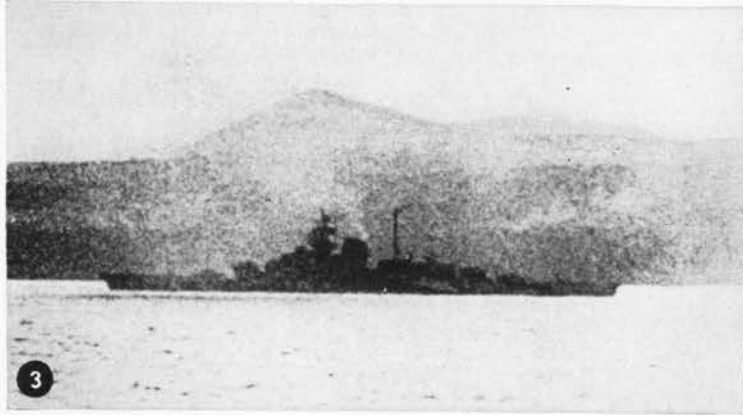
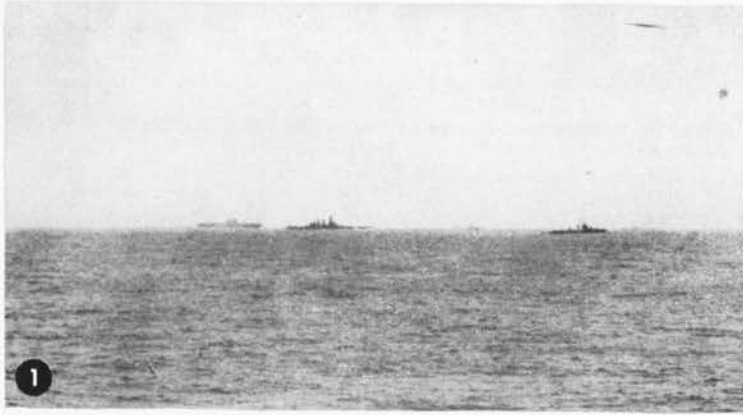
JUNE, 1944  
NUMBER 10

WAR DEPT.  
NAVY DEPT.





# QUIZ NO. 1: WARSHIPS OF FOUR NAVIES





# RECOGNITION JOURNAL

JUNE, 1944

NUMBER 10

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OUTLINED BY FLASHES FROM HER GUNS, NORTH CAROLINA STANDS OUT AGAINST NIGHT. IN COMPLETE DARKNESS ONLY THE NIGHT-ADAPTED EYE COULD SEE HER

## WAR AT NIGHT

**W**ar is a 24-hour business. And no time is more important to the fighter than the black hours between dusk and dawn. For this is the attacker's time . . . stealth and darkness cover his approach; and if he knows his target the cards are stacked his way. The only insurance against such an attack is vigilance and, when that fails, tragedy can result.

Vigilance, like all the elements of war, can be used positively. When neither side has an exact preview of a situation, the fighter with the best observation has the advantage. Much of this observation can be carried on by radio-locator equipment but, despite its many great accomplishments thus far, radar is not infallible. To get best results it must be supplemented by visual lookouts. Early initial contacts by lookouts far outnumbered radar contacts in the early days of the war. Until mechanical detection reaches its ultimate development, the human eyes of lookouts will remain the best protection.

Until war gave it the necessary impetus, little research had been done in night vision. We have had to learn how to live and see in the dark. First to realize the enormity of the problem and to make practical experiments in the unusual physiology of night vision were the British. During the Battle of Britain pictures of begoggled, carrot-eating RAF nightfighter pilots were

commonplace. Though the carrot theory is an exploded myth, their sound theories of scanning form the basis of instruction in the scores of U.S. Army and Navy schools which are now training thousands of prospective lookouts.

In this issue the *Journal* takes up night vision at sea; in a future issue night scanning for aircraft will be discussed.

At a typical school, lookout candidates are learning for the first time the extreme importance of their job which is so vital that a warship carries hundreds of lookouts of four types; sky, surface, horizon and, in bad weather, fog. They realize also that every hand on a ship must be a secondary lookout.

Prospective lookouts are learning for the first time that they are equipped, for the most part, with two types of vision. In addition to their primary or daytime sight, they have secondary or night vision. They are taught to sensitize their retinas to pick up light 10,000 times too dim for their daylight eyes to see, so they can spot a lighted match five miles away. They are taught to distinguish dim shapes in the night without looking directly at them, to scan the skies and horizon with short jerky movements of their eyes so that the exquisitely sensitive cells (rods) at the periphery of their retinas will register shapes that the night-blind cells (cones) located in the center of the retina cannot see.



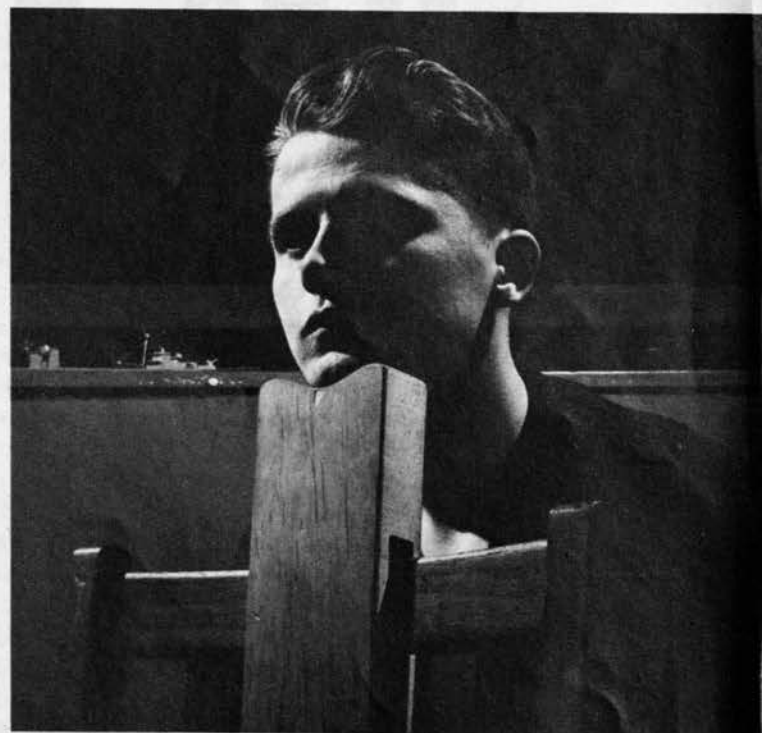


Men in red goggles relax in classroom as they wait to become dark-adapted. The goggles cut off all but red light, allow the ultra-sensitive rods (the night-seeing portion of the retina) to come into operation,

while still permitting daylight vision with the color-sensitive cones. Dark adaptation takes about half an hour and becomes complete with five minutes in pitch dark during which the cones cease to function.



Tests are necessary to determine ability to see in the dark. Student watches a T-shaped plane model on luminous dial and must read correctly the direction it is flying. About 5% have poor night vision.



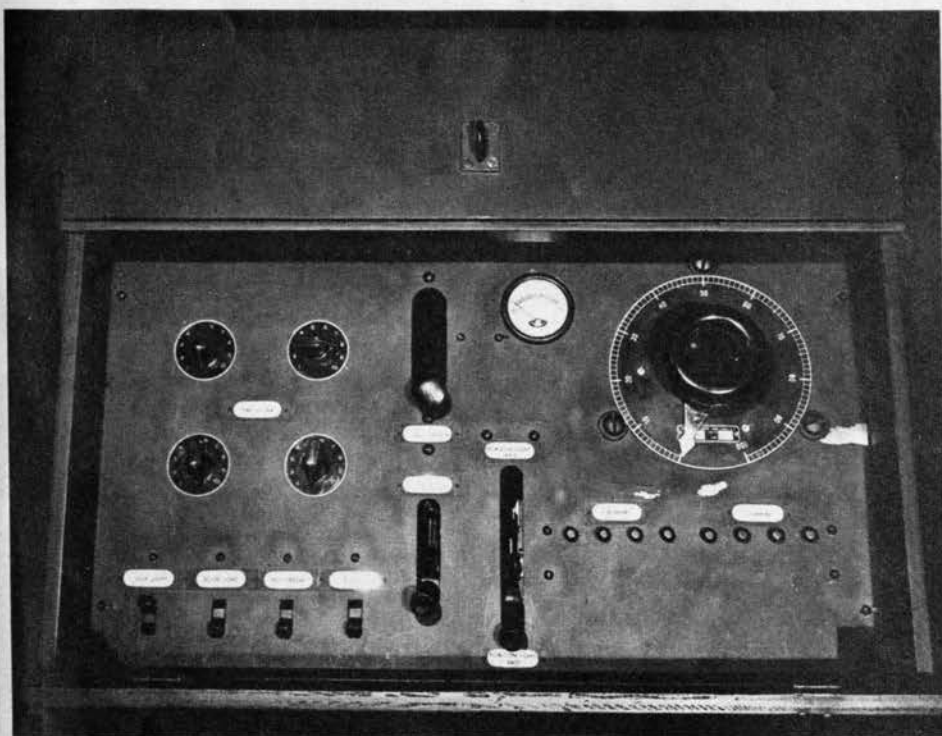
Candidate being tested rests his chin on a support to keep his head immobile while his eyes scan the disk. Candidates frequently discover that they have good night vision but have not yet learned to use it.





**Simulated horizon** duplicates conditions found on shipboard. Men in foreground, wearing battlephones, are acting as port and starboard watch. As models move along stage, lookouts identify the ship, re-

port its relative bearing to the men at the control board (*below right*). Above, port watch calls "BB at three four oh"; starboard, "Jap carrier at zero four oh." Note, neither watch looks directly at the objective.



**Control board** is wired to stage lighting. The rheostat at the upper right controls the degree of lighting. The switch at center produces east horizon light when down, west light when up. Other switches simulate fire at sea, moonlight, lightning, and gunfire.



**Control men** check reports from lookouts (*above*). Battlephones are plugged into board just as they would be connected from lookout station to bridge.



# HOW TO SEE IN THE DARK

**H**uman beings are born with two different types of sight, but we have forgotten how to use our night eyes. The human eye is like a camera. It has a lens, a diaphragm (iris) and a receptive film (the retina). But it differs in that the film is a double mechanism. In daylight, one set of cells called cones is most sensitive. These see detailed form and color. There are about 7,000,000 concentrated at the center, or fovea, of the retina. To see with the cones we look straight ahead.

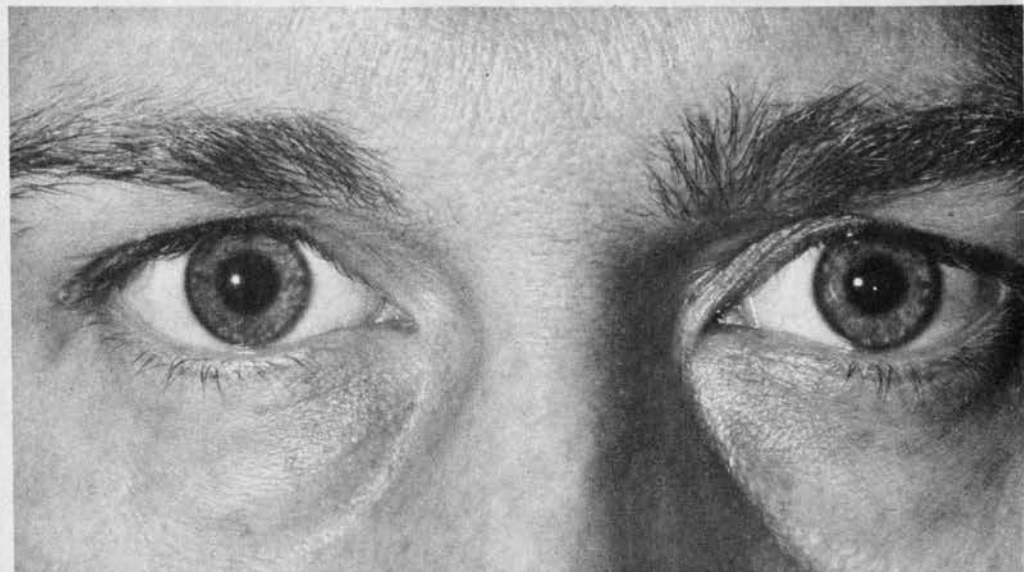
The second set of cells are called rods. They are concentrated in the outer parts of the retina. They are blinded by strong light but are highly sensitive to motion and 10,000 times as sensitive to light as the cones. They are color-blind. In order to see with the rods they must be cut off from light for about 30 minutes until a subtle chemical change takes place. Then, because of their location, it is necessary to look obliquely at what you wish to see.

As the light grows dim, the pupil of the eye expands to allow more light to reach the retina. This first step in dark adaptation takes about 15 seconds.

Once the eye is dark-adapted, it is still necessary to learn to use it. Because the rods are so sensitive to motion, your eyes should sweep the field of view in short jerky movements; moving, pausing briefly, moving again. Because the cones are now blind, the image will appear on the outer part of the retina. You must learn not to try to look at it. It will be a fuzzy grey shape, but with practice you will learn to recognize it for the ship, tank or plane it is.



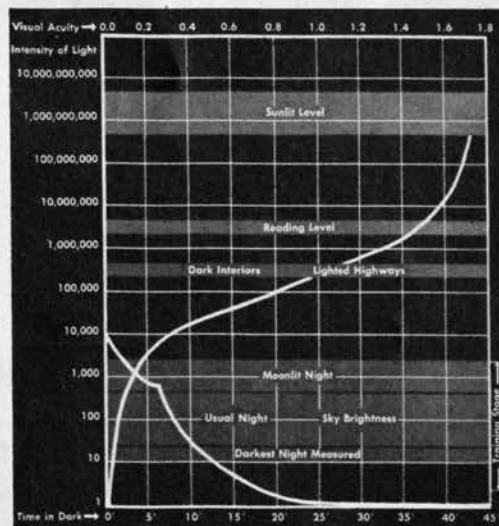
IN STRONG DAYLIGHT THE EYE DIAPHRAGM (IRIS) IS NEARLY CLOSED, THE LENS AREA (PUPIL) IS SMALL



AS LIGHT DECREASES IRIS OPENS ALLOWING MORE LIGHT ACCESS TO CELLS OF RETINA (ABOVE, BELOW)



BELOW, DARKNESS IS COMPLETE. CONES INACTIVE. EYE MUST LOOK OBLIQUELY AT OBJECT TO SEE IT



On vision chart, rising line represents day vision; falling line stands for night eyes.





IN SUNSET CONES ARE STILL OPERATIVE AND VISUAL ACUITY THEREFORE GOOD, OBJECT IS SHARP AND CLEAR, IMAGE EASILY SEEN AND TRANSMITTED TO BRAIN



APPROACHING DARKNESS IS PARALLELED BY OPENING OF IRIS (OPPOSITE); PUPIL ENLARGES SLOWLY AS DARKNESS INCREASES GRADUALLY (BELOW AND BELOW LEFT)



IN NEAR-COMPLETE BLACKNESS VISUAL ACUITY IS NIL, BUT OBJECT CAN BE SEEN AS A DIM SHAPE WITH NIGHT EYES. IF STARED AT IT WILL DISAPPEAR FROM VISION





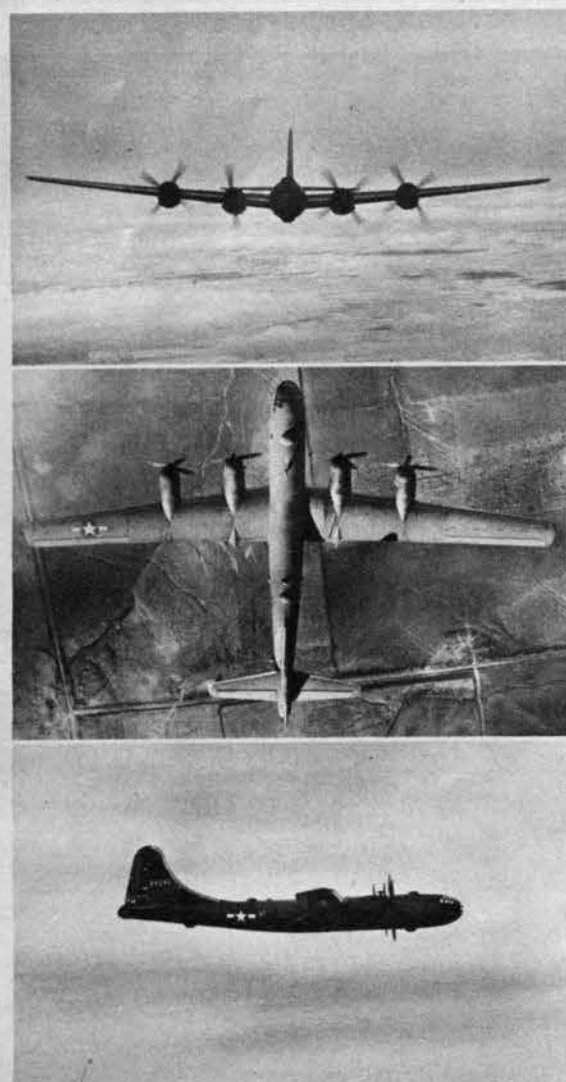
# B-29

## Great bomber forecasts future

The B-29 is a lot of airplane. It has a greater range, bomb load and speed than any previous heavy bomber. A B-25 could be parked under each giant wing; the tailplane has a span two feet greater than a P-47. Its 98-ft. fuselage stretches two and half times the length of a standard American freight car. The huge Fortress-style fin and rudder rises nearly 28 ft.

Aerodynamically, the Superfortress is clean. Where refinements have been tacked on to our present operational types, they have been built into the B-29. The four remotely controlled turrets and the glassed-in blisters for the gunners make only slight bumps on the smooth cylindrical fuselage. The 56-in. wheels of the tricycle undercarriage fold completely into the fuselage and in-board nacelles.

With its great range, the B-29 will be able to carry U. S. precision bombing to Axis-held territory that has been hitherto untouched. On shorter runs, its effective bomb load can be enlarged to give each sortie a shattering weight of destruction.



Sleek contours of the Superfortress show in three orthographic views. Note the resemblance to B-17.



OVER PEACEFUL KANSAS, WORLD'S LARGEST BOMBER SPREADS ITS 141-FT. WINGS. FOUR FAT

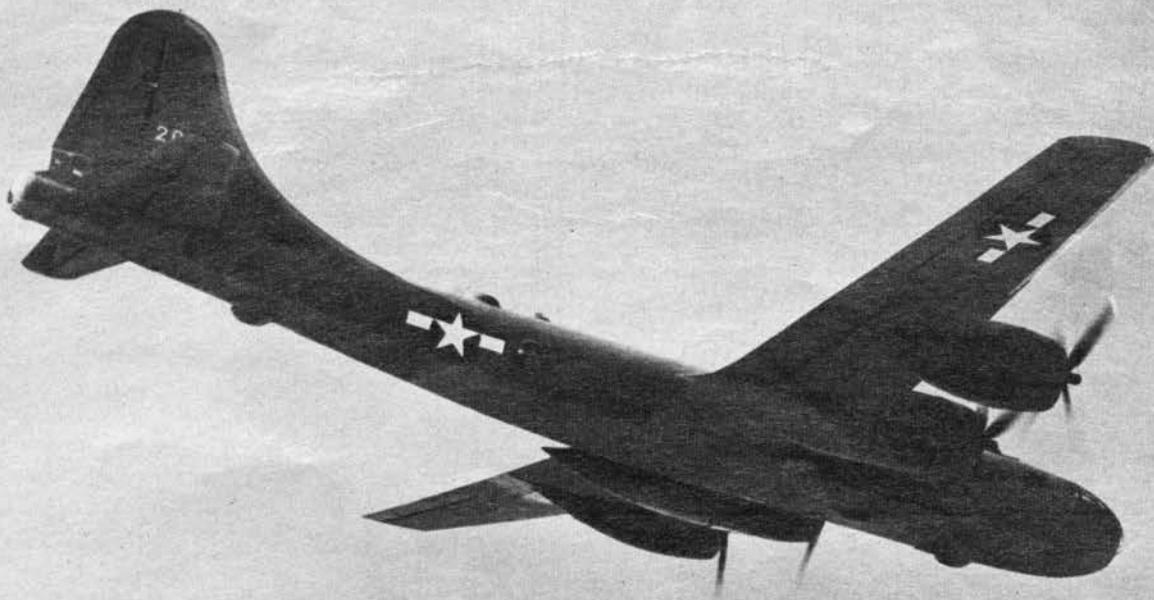
NACELLES HOUSE THE GREAT TWIN-ROW RADIAL ENGINES WHICH POWER THE FOUR-BLADED PROPELLERS. THESE DRIVE THE BIG PLANE AT WELL OVER 300 M.P.H.





**Long tubular nose** balances the B-29's heavy-looking fin and rudder. This is one of the features which help distinguish the Superfor-

ress from its Boeing predecessors. The inner engine nacelles are longer, project well beyond the long narrow wing's straight trailing edge.



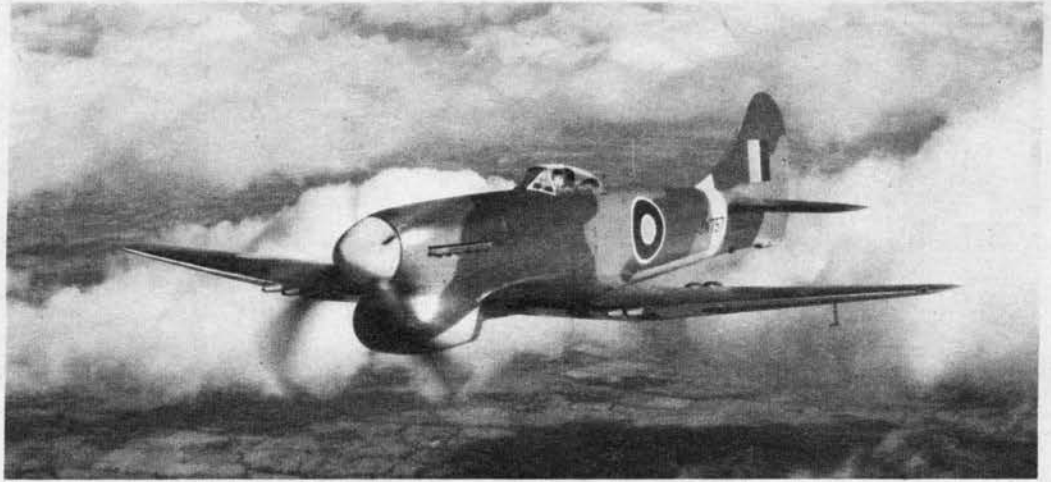


# ALLIED AIRPLANES

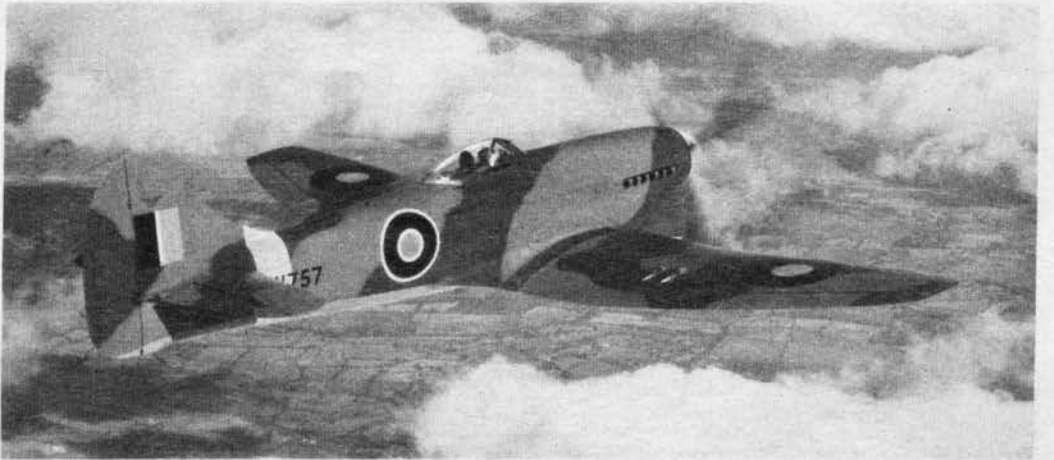
## New and modified aircraft

Here are the first pictures of Britain's important new Tempest V (right). Little can be revealed about it, but with the 2,220-hp. Napier Sabre engine, this latest Hawker fighter looks like a very hot airplane. Picture below is the P-47D-25 series, a more smoothly streamlined model of this outstanding U. S. fighter.

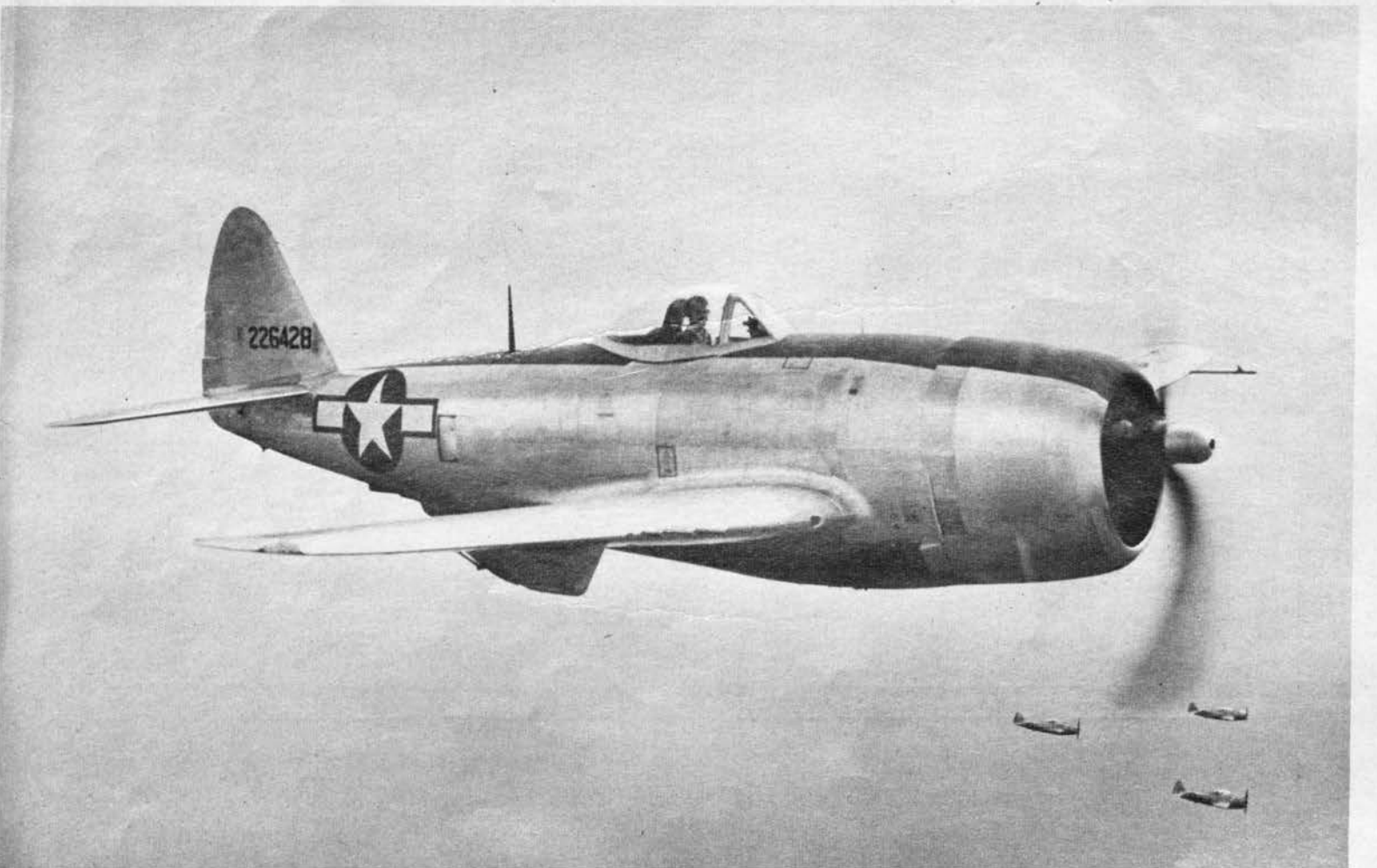
Recent improvements on three other top-flight U. S. aircraft are shown on the next two pages, including the long-range P-51D and the B-24H with new nose and tail turrets. In the new B-25 versions, our Air Forces follow customary World War II practice of turning out variations on standard types to meet new demands of the air war. Besides the super-armed attack B-25H (14 machine guns, 75-mm. cannon) shown in the pictures, there is a later model, the J. This is a straight medium bomber version with glassed-in nose; carries 13 machine guns but no cannon.



**Tempest V** clearly shows Typhoon ancestry. Large bulge below the nose houses Napier Sabre engine's radiators. Moderate outboard dihedral starts at midwing; inboard section is straight.



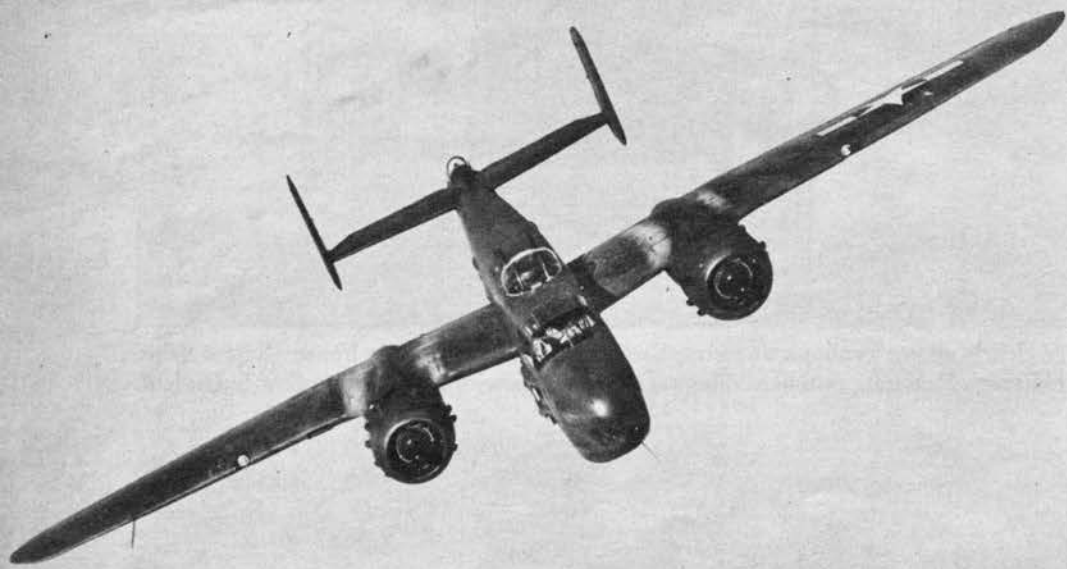
**Rudder is rounded**, while fin fairs into fuselage. In plan view, the wing looks elliptical. Inboard panel is slightly tapered, outboard panel is curved, with more pronounced curve on trailing edge.



**New P-47D** has a bubble canopy replacing the old cockpit. Visibility is improved, and the unbroken dorsal line gives the P-47D-25 series

a more sleek and symmetrical fuselage than the older models. Streamlined rack for bombs or extra fuel tanks can be seen below the wing.





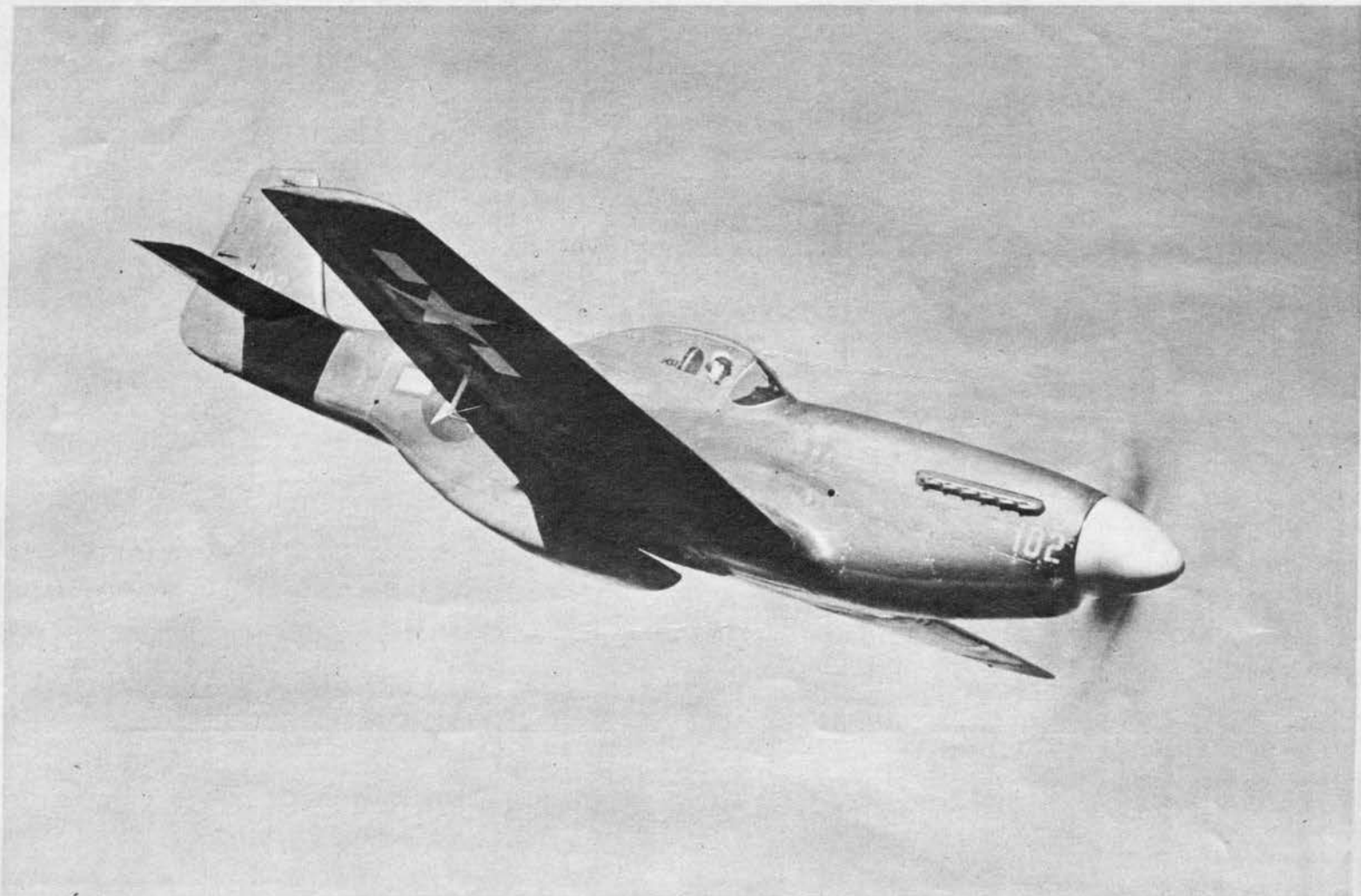
**Heaviest armed plane** is the B-25H which carries a 75-mm. cannon and fourteen .50-cal. machine guns. Dorsal turret has been moved forward to just behind the cockpit.



**"Flying 75"** is augmented by four machine guns in nose and two package guns mounted on either side.



**Raised blister** of tail gunner's position appears on H and J models. Note waist guns behind the wings.



**Latest Mustang** is the P-51D. This is an improvement on the famed P-51B now operating over Germany. The most conspicuous change is

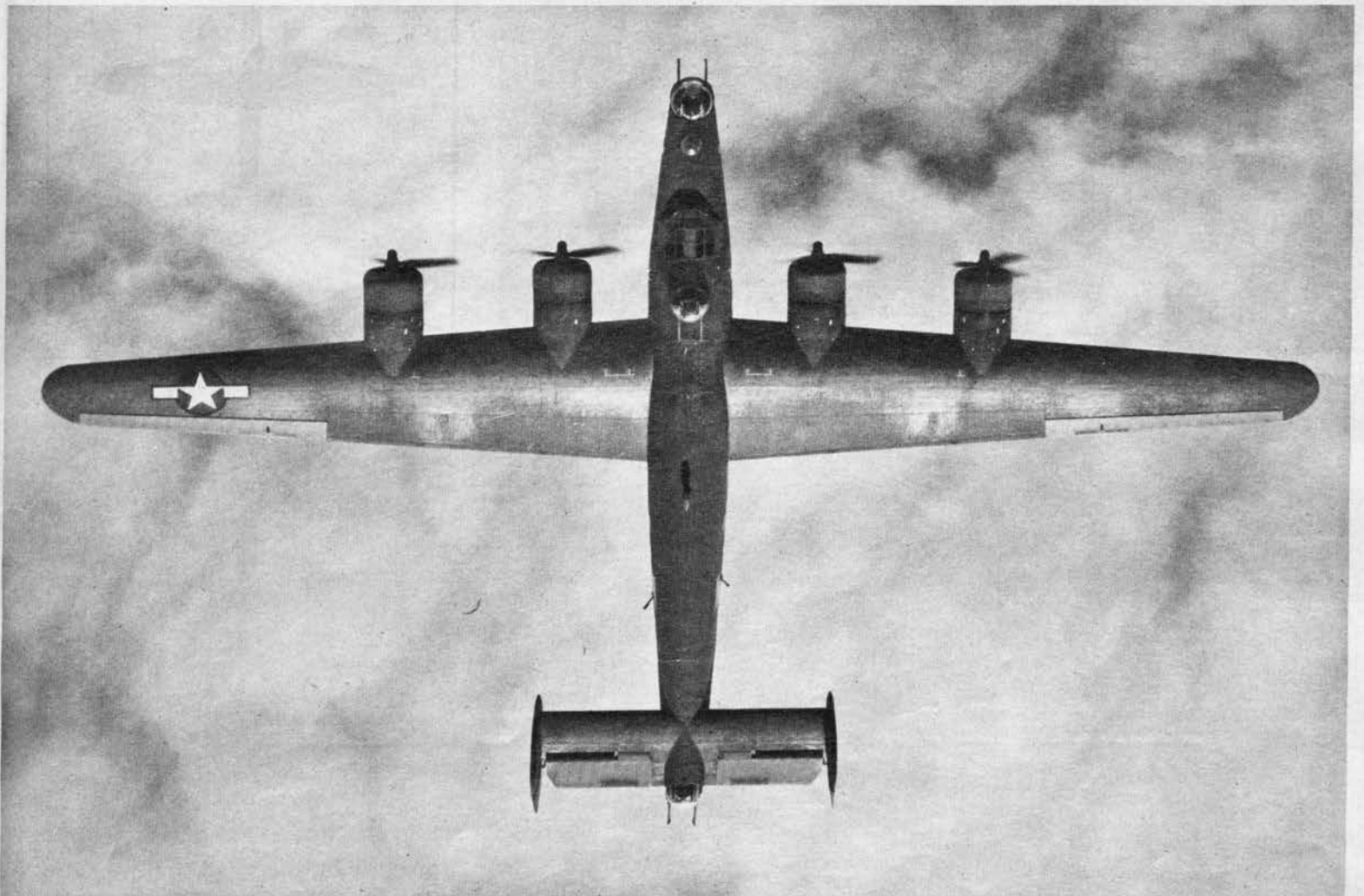
the bubble canopy which is raised above the straighter, smoother top line of the fuselage. Like the P-51B, it has air scoop below the nose.





**Latest Liberators** are the H and J models. Their better-arranged armament has not altered the plane's basic appearance. Long narrow Davis

wing, heavy boxcar fuselage, big broad fins and rudders rounded at top and bottom are the B-24's most important recognition features.



**Nose and tail power turrets** show plainly in this plan view of the B-24H which also carries retractable Sperry ball turret in belly. Seen

from above or below, its very great wing span contrasts with the relatively short fuselage. This is also true of the cargo version, C-87.



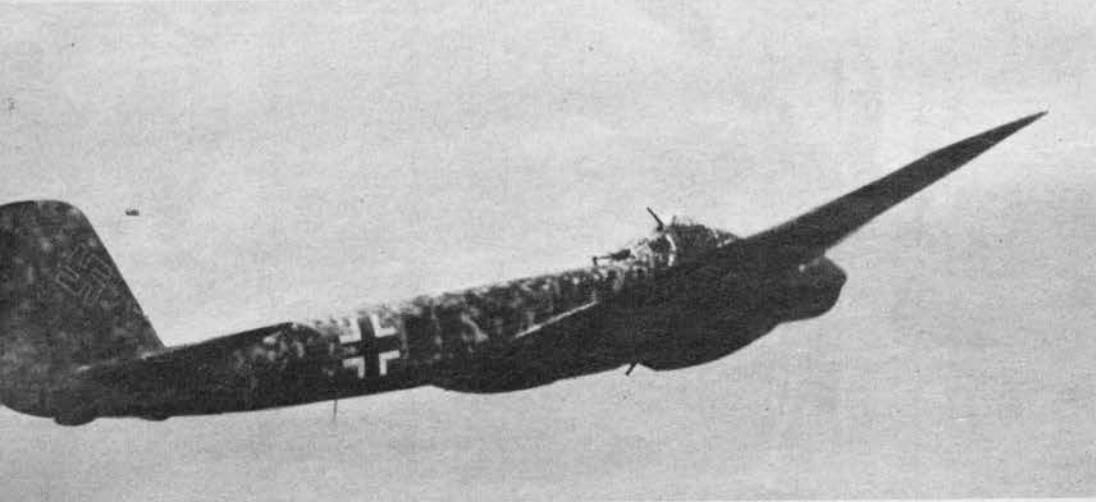
# JU-188

## New medium bombs England

Germany's newest medium bomber, the Ju-188, has played a major role in the latest raids over England. Although developed from the familiar Ju-88, this latest Junkers is far more than a sub-type of the older bomber. Drastic changes in wing, nose and tail assembly have greatly improved the all-around flying and combat qualities. The added horsepower of its BMW-801, 1,600-hp. engine gives the 188 nearly 50 m.p.h. more speed than the 88A series. The maximum bomb load is greater by at least 1,000 lb. Armament is rearranged but not increased; the new bomber mounts a 20-mm. cannon in the nose, single guns in dorsal turret and rear cockpit, and twin guns in the belly. Intended as a general-purpose bomber, the Ju-188 is designed to carry large and varied external loads, and is fitted with dive-brakes.



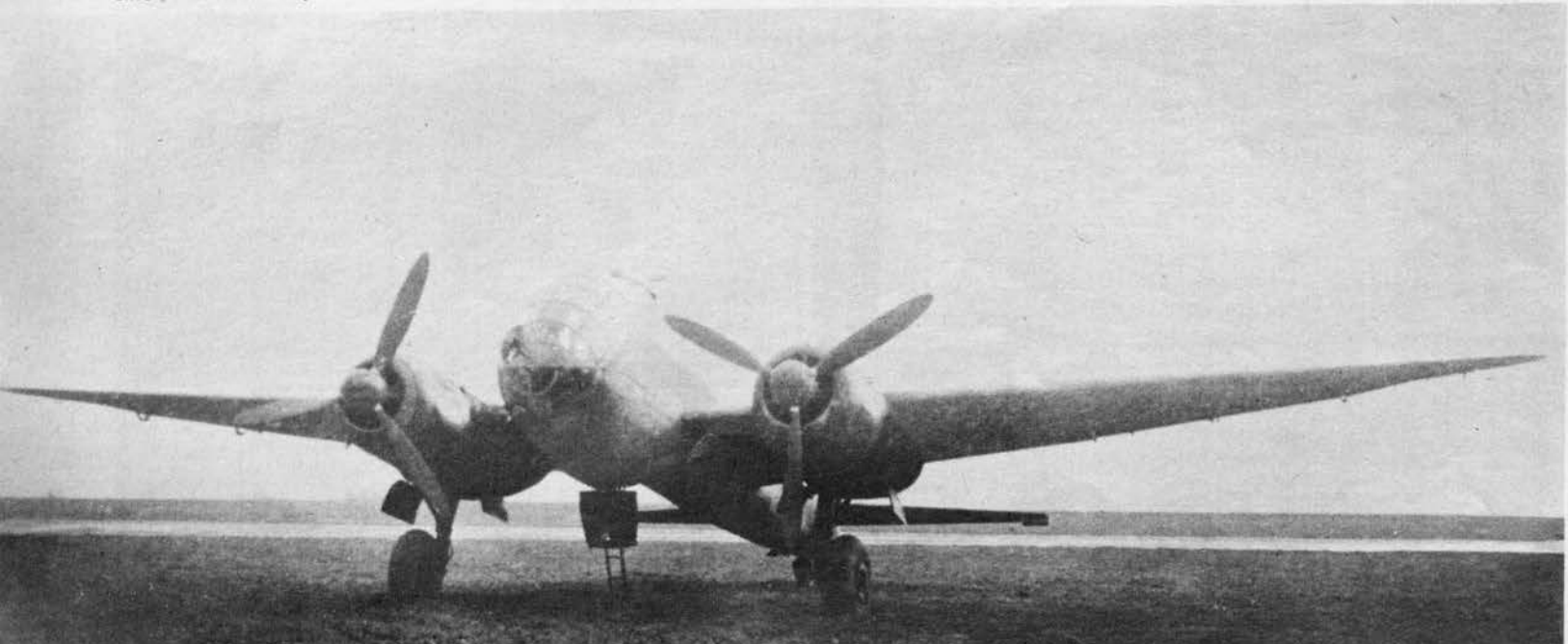
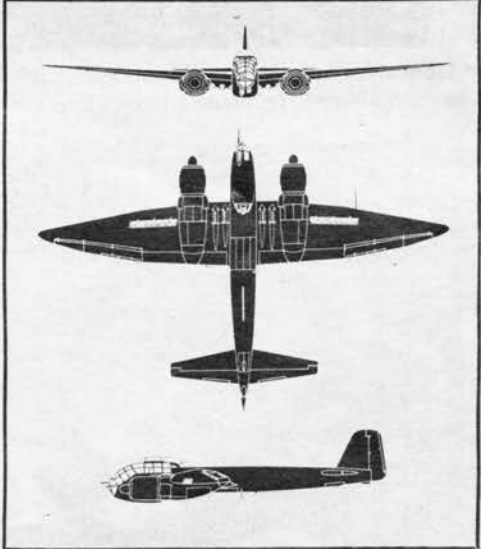
WING REMAINS LOW, IRREGULAR IN SHAPE, BUT WITH MORE POINTED TIPS THAN JU-88, AND 6 FT. LONGER



HIGH, ANGULAR FIN, RUDDER SITS ATOP LONG THIN FUSELAGE OF TWIN-ENGINE JU-188 (ABOVE, BELOW)

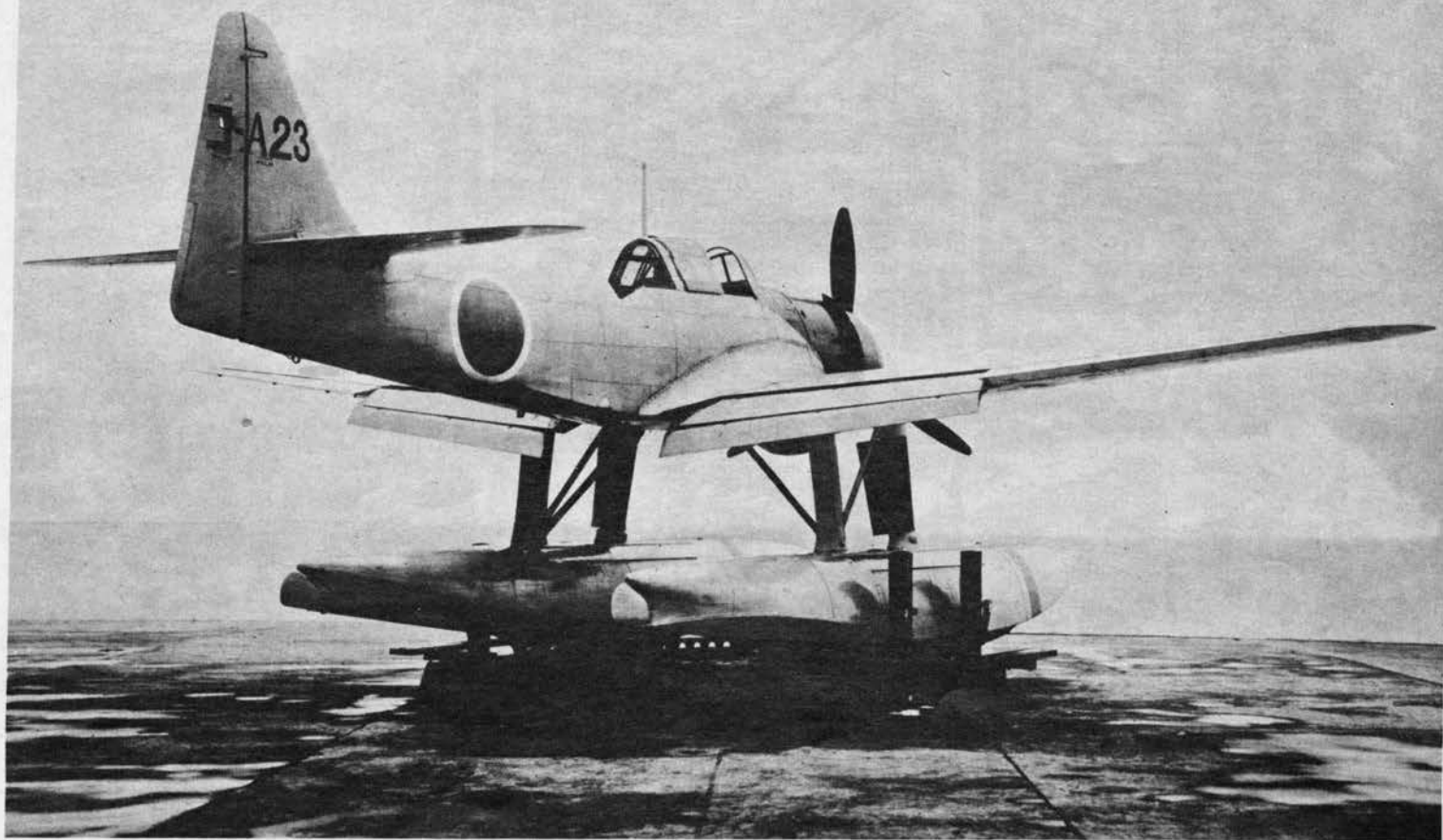


SMOOTHLY ROUNDED, GLASS-ED-IN NOSE OF JU-188 GIVES BETTER VISIBILITY. PICTURE BELOW ALSO SHOWS THE TALL UNDERCARRIAGE AND EXTREME WINGSPREAD



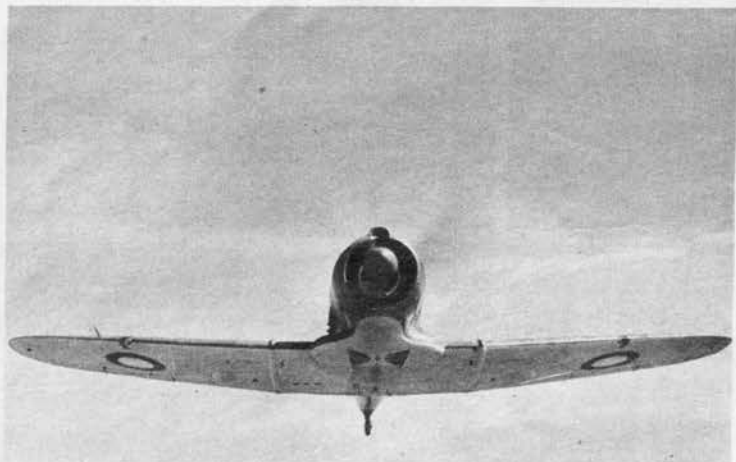


## MINOR PLANES & MODIFICATIONS



An experimental model of a new Japanese two-place twin-float plane is shown on edge of ramp. Called Experimental 14, it is in-

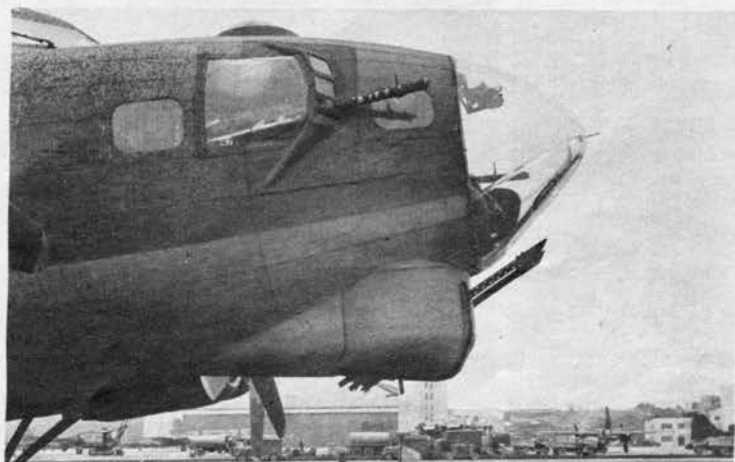
tended for reconnaissance but can also be used as a divebomber. Its maximum speed is 278 m.p.h. Span, 42 ft., length, 35 ft. 7 in.



Head-on view of Boomerang (often mistaken for Zeke) shows air intake atop fuselage, pear-shaped cowling and straight inboard panel.



Swept-back wing and stubby fuselage distinguish Australian Boomerang. Fin and rudder and tailplane are rounded on trailing edge.



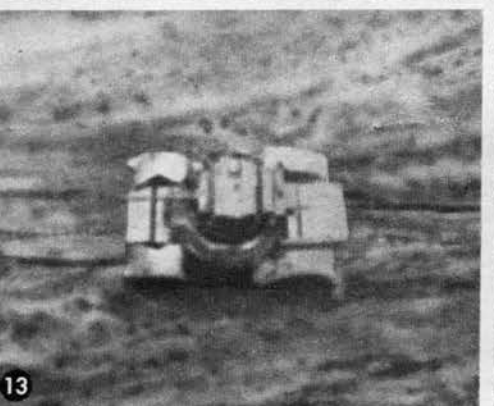
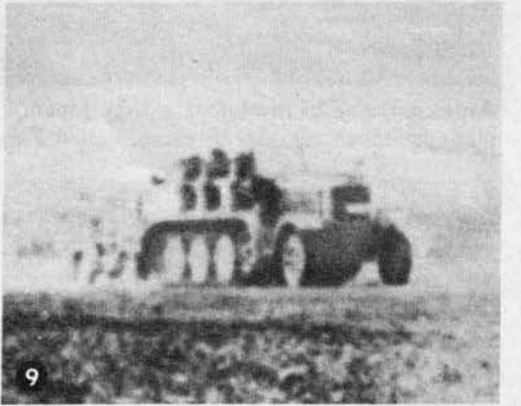
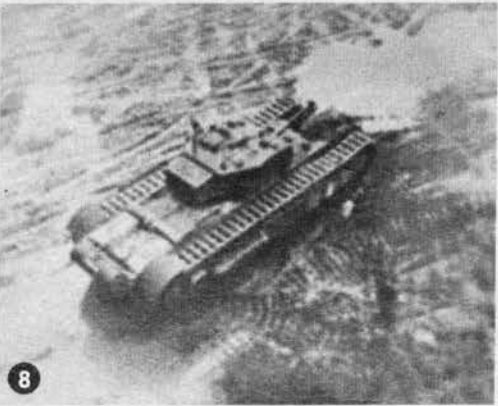
B-17's new "cheek guns," in side positions, together with the chin turret, give protection to the big bomber's nose from angle attacks.



Rounded nose of Do-217M1 sets it apart from other models. This late Nazi bomber was shot down during desperate raids on London.



# QUIZ NO. 2: ALLIED AND NAZI ARMOR



(For answers, see p. 48)



# TANKS

## Mediums are war development

The medium tank has proved to be one of the most important developments of this war. It is the tank employed in greatest numbers; the most versatile and useful of armored vehicles. Today, the medium tank is fast, rapid-firing, hard-hitting.

In the first issue of the *Journal* we described the principal medium tanks. Now we point out structural and recognition variations in the latest models. One, the British Crusader, has been replaced by more powerful Cromwell. Others have had radical changes dictated by tough battle experience.

The U. S. began the war with the M-3 General Grant, a tank handicapped by the limited traverse of its 75-mm. gun. It was followed by a series of models of the M-4 General Sherman. Some of these had cast and some had welded hulls. Latest versions, now seeing action in Europe, have welded hulls and, in some cases, mount a larger weapon than the standard 75-mm. gun.

The successful Russian T-34 design has influenced the construction of tanks of other nations, especially the British Cromwell and the German Panther. The Cromwell borrowed the T-34's broad, low silhouette; the Panther adopted its long, sloping bow, and its turret shape. A study of the medium tank silhouettes below shows clearly different national characteristics.



Four Russian T-34 medium tanks wind their way down a hillside. Because of the T-34's low silhouette, those in the distance are hard to distinguish. Germans admire this tank.



U.S. MEDIUM TANK M-4



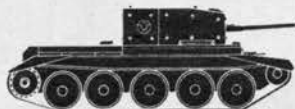
BRITISH CRUSADER TANK



JAP MEDIUM TANK 2597



U.S. M-4 WITH 105 HOW.



BRITISH CROMWELL TANK



GERMAN PzKw MARK IV



U.S. M-4 WITH 76-MM. GUN



RUSSIAN T-34



GERMAN PANTHER





GENERAL SHERMAN M-4 WITH 75-MM. ARMAMENT IS THE STANDARD AMERICAN MEDIUM TANK. ITS TURRET IS LARGE AND ROUNDED; HULL, ANGULAR BUT STREAMLINED

# ALLIES' TANKS ARE AMONG BEST OF WAR

The mediums have many hard-hitting features

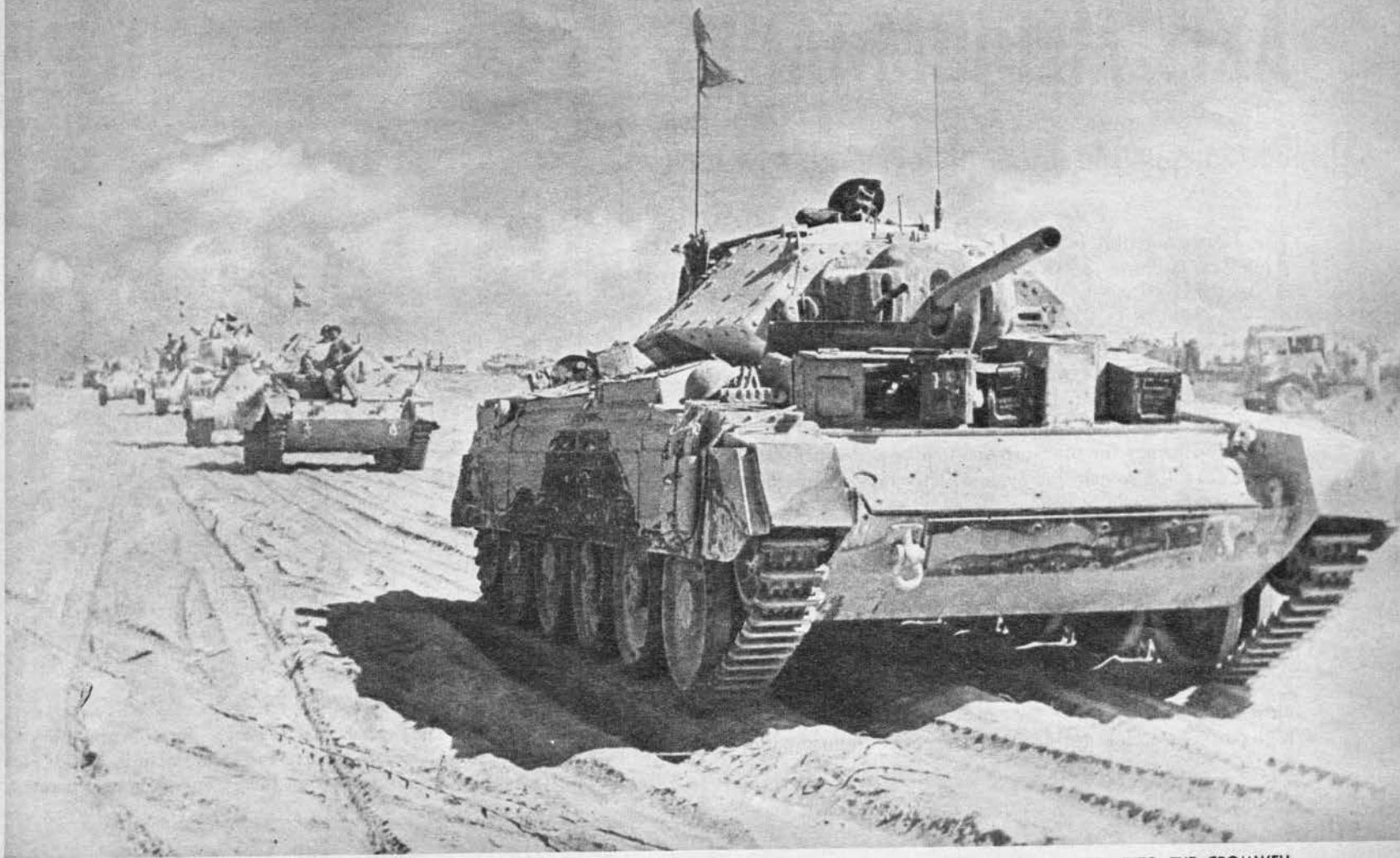


**Short, fat assault gun** on the Sherman tank is a 105-mm. howitzer. Long-barreled gun below is a high-velocity 76-mm. which calls for a bigger turret with roomier fighting compartment, larger hatches.



**Russian infantry** makes its attack in the wake of several T-34's. The armor of these tanks slopes on all sides; the general impression created by the hull with new heavy turret is that of impressive strength.





FAST BUT LIGHTLY ARMORED, THE CRUSADER FOUGHT IN NORTH AFRICA, HAS TAUGHT THE BRITISH MUCH THAT THEY HAVE INCORPORATED INTO THE CROMWELL

After a late start in the development of tank warfare, the Allies have progressed rapidly. Their greatest achievements have been with medium tanks; the battle-scarred Russian T-34, the U. S. M-4, and the brand new British Cromwell. All three tanks are outstandingly good designs—the result of trial-by-fire development.

The U. S. M-4 General Sherman is pictured here with three different main weapons; the standard 75-mm. gun, a 105-mm. howitzer, and a high-velocity 76-mm. gun which is mounted on an enlarged turret. The Russian T-34, at bottom of the page, also appears with a larger turret, one which is very similar to that on the Russian heavy tank, the KV-1. From the obsolescent British Crusader (*above*) to the Cromwell (*lower right*) the trend of design toward increased armor, armament and lower silhouette is striking.



British Cromwell tank is unique-looking with its low, flat-topped hull and straight-sided, heavily-bolted turret. Its six-pounder main gun is the heaviest British tank armament. Suspension resembles T-34's.



New turret to hold T-34's long-barreled 76.2-mm. gun has bulging "cheeks" on either side of gun mantlet. T-34 has a long sloping bow and broad tracks. Five double bogie wheels are large and dish-shaped.





# AXIS MEDIUM TANKS

## Germans add to armor plate, launch new tank

The German genius for armament design produced an excellent medium tank in the PzKw IV which outfought Allied armament in the Libyan Desert. The Mark IV began the campaign with a short-barreled 75-mm. main weapon, gradually changed to a longer version with a higher velocity. Pictures from the Italian front show a new silhouette caused by the use of spaced armor which is hung from the sides of the hull and extra turret armor bracketed around the turret wall. Apparently increased Allied firepower has made it necessary for the Germans to give added protection to the vital area of the suspension system. The added armor surrounding the turret is clearly to reduce the effectiveness of Allied shells by causing them to explode before piercing the turret wall.

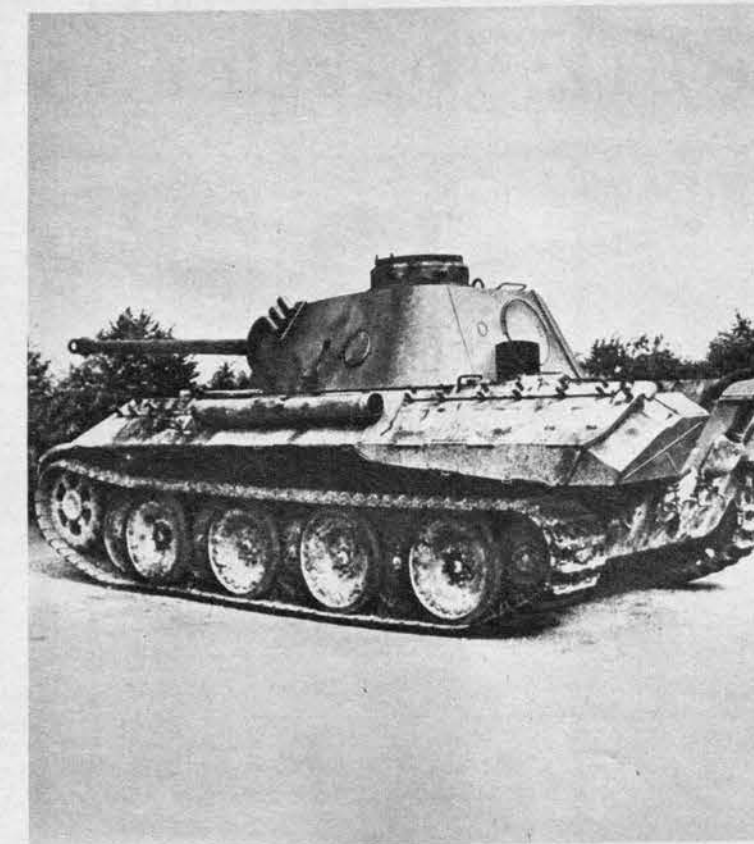
Proof that the Germans think highly of the medium tank is the fact that they have just built a new one, the PzKw V, the Panther, which has still greater firepower and heavier armor. Alongside the more formidable weapons of Germany and the Allies, the Jap medium tank 2597 appears outclassed. This model was introduced in 1937 and was used to a limited extent in China and in the early Burmese campaign. However, the Japs have already made tanks with a high power-to-weight ratio and may produce some fine new models.



Interesting view of the German Mark IV shows how the armored side skirting, attached to brackets, hangs away from the hull. Notice how extra turret armor stands away from turret, curves toward mantlet.



Prominent armored skirting on Mark IV conceals and protects hull and suspension system. Turret looks larger in diameter with added armor. Prominent cupola is German feature, as is muzzle brake on gun.



Newest Nazi tank, Mark V Panther, may be copied from Russian designs. It is built close to the ground with sides well sloped; has eight overlapping bogie wheels. The 75-mm. gun barrel is over 18 ft. long.



Jap medium tank 2597 head-on looks like U. S. General Grant with off-center turret. Gun shown is a low-velocity 57-mm. Hull is long, narrow and low. Light track (see below) has six medium bogie wheels.



GERMAN STORM TROOPERS IN SEPTEMBER PARADED DOWN THE

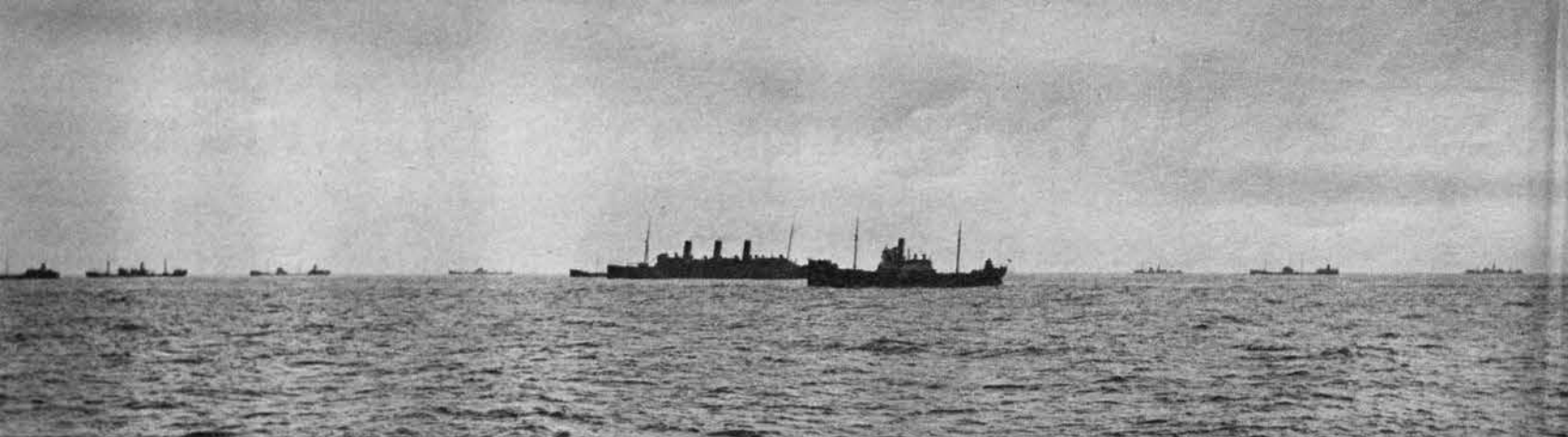
STREETS OF MILAN, ITALY IN PzKw MARK IV'S. NEW ARMOR AROUND TURRET MAKES IT LOOK LARGER, GIVES TANK APPEARANCE OF MORE POWERFUL, VICIOUS WEAPON



# QUIZ NO. 3: PLANES HEAD-ON—LARGER ONES ARE EASY, SMALLER ONES DIFFICULT







ALLIED CONVOYS MAY INCLUDE EVERYTHING FROM PASSENGER LINERS TO SMALL COASTAL CARGO CARRIERS BUT MOST SHIPS NOW FALL INTO SEVERAL STANDARD TYPES

# STANDARD SHIPPING WINS WAR OF SUPPLY

**L**ogistics, the science of supplying warfronts, is the touchstone of military success. As such, the shipment of men and matériel is the biggest business in the world today. To pursue the war to its victorious conclusion, 5,000,000 men must be moved across the oceans of the world. Each requires an initial seven tons of equipment and a steady flow of a ton per man per month to keep him in combat. The North African campaign alone involved the transport of more than 700,000 different items of equipment, many of them in vast quantity. And to our greatly expanded fleets at sea must go commensurate tonnages of fuel, ammunition, food and naval gear.

Although the airplane is the newest form of cargo transport,



PASSENGER SHIPS (CENTER REAR AND RIGHT) ARE EASILY IDENTIFIED BY THEIR MULTIPLE STACKS, PROVIDE LESS RECOGNITION TROUBLE THAN CARGO AND FUEL CARRIERS

what it has been able to accomplish so far has been only a spectacular trickle. The need has been and continues to be ships. In September 1939, the combined merchant marine of the Allies amounted to 43,000,000 dead-weight tons. By December 1941, about 25,000,000 tons had been sunk or captured. In 1942 the United Nations built merchant bottoms totaling 11,000,000 tons. Losses for that year amounted to 12,000,000.

But the picture improves. Our defenses have greatly weakened the U-boat threat. England-based planes have smashed at German submarine pens along the Channel coast. Baby flattops and an augmented escort navy make it ever hotter for Nazi underseas fleets. And Allied ship construction has left the rate of sinkings

far behind. In America alone more than 2,400 ships have been built since Pearl Harbor and they are still coming off the ways at the rate of five a day. By the end of 1943 American merchant shipping amounted to approximately 28,000,000 dead-weight tons and by the end of this year, the total will be close to 50,000,000.

Merchant vessels have always been an enormous recognition problem, but the nature of most of this new construction makes recognition somewhat easier. Between wars, most ships were built by private venture; each was more or less custom-built. But the war's overwhelming demands for new bottoms make mass production a must. This means standard designs. With study these designs can be as readily recognized as corresponding classes of warships.

AN AMERICAN HEAVY CRUISER OF THE PORTLAND-NORTHAMPTON CLASS LEADS THE BROAD RANKS OF AN ALLIED CONVOY AS ESCORT DESTROYERS RANGE OUT IN FRONT



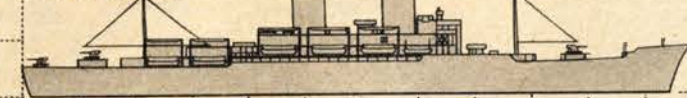
MOST SHIPS PICTURED HERE ARE OF MODERN DESIGN. THEY INCLUDE MANY EMERGENCY TYPES SUCH AS LIBERTY SHIPS AS WELL AS THE STANDARD USMC CARGO TYPES



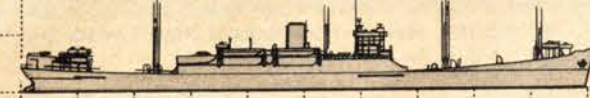


AMERICAN

### PASSENGER



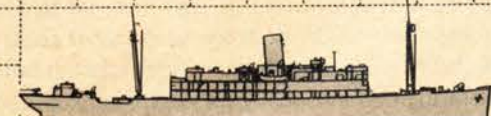
USMC P-1 & P-2 TRANSPORTS



BALTIMORE MAIL "CITY" LINER

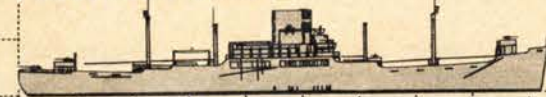


U. S. SHIPPING BOARD "PRESIDENT" TYPE

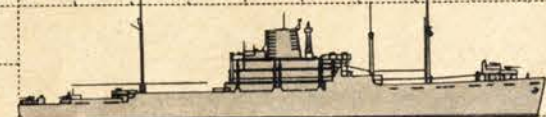


EX-UNITED FRUIT LINER, NOW STORESHIP

### PASSENGER CARGO



USMC C-3, NOW APA

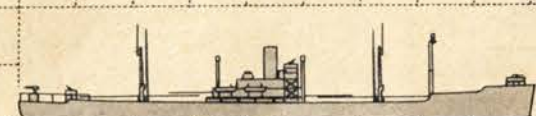


USMC C-3, NOW APA

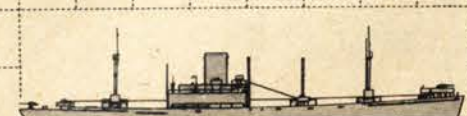
### CARGO



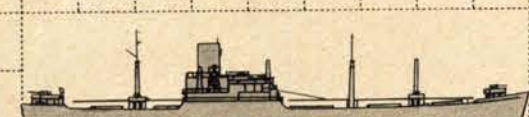
USMC EC-2 (LIBERTY SHIP)



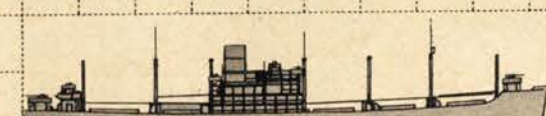
USMC VC-2 (VICTORY SHIP)



USMC C-1A



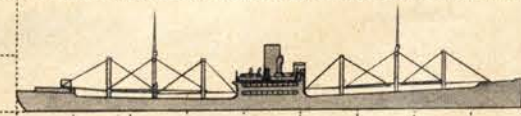
USMC C-2



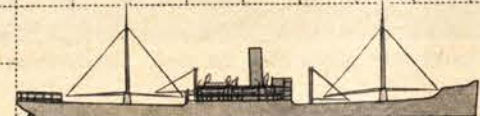
USMC C-3, MAINLY NAVAL AUXILIARY



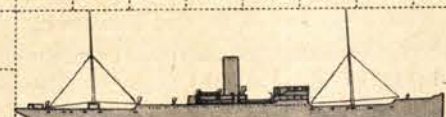
USMC N-3, BUILT FOR UNITED NATIONS



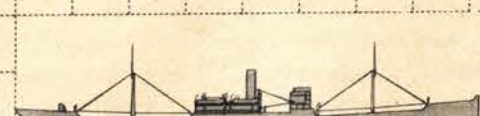
"LUCKENBACH LINE" FREIGHTER



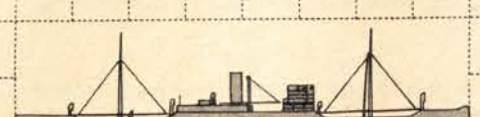
TYPICAL OLD FREIGHTER



OLD PASSENGER-CARGO TYPE (VISUALLY CLASSED AS CARGO)



U. S. SHIPPING BOARD, "WEST" TYPE



U. S. SHIPPING BOARD, HOG ISLAND TYPE



U. S. SHIPPING BOARD, "LAKE" TYPE

### ENGINES-AFT CARGO

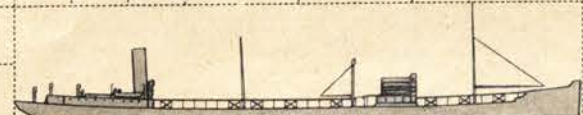


SMALL COASTAL TYPE

### TANKERS



NEWEST NAVY TANKER



LARGE OLD TANKER



PRE-1930 TANKER

### COLLIER



SELF-UNLOADING BULK CARRIER

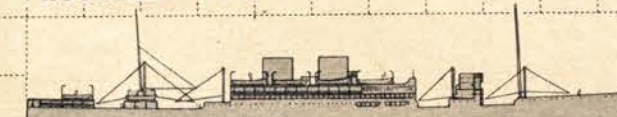
### TRAWLER



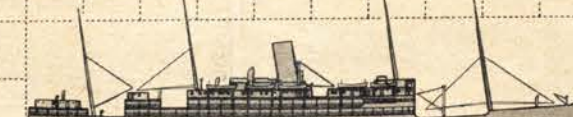
U. S. TRAWLER

BRITISH

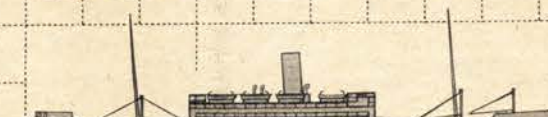
### PASSENGER CARGO



ROYAL MAIL MOTOR LINER

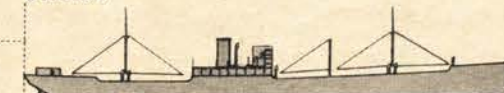


"BIBBY" LINER

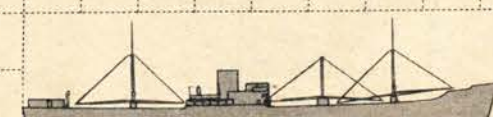


BRITISH INDIA MAIL LINER

### CARGO



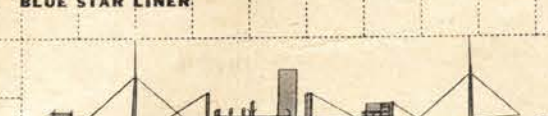
LARGE MODERN FREIGHTER



MODERN FREIGHTER—SIMILAR TO SCANDINAVIAN AND JAPANESE



BLUE STAR LINER



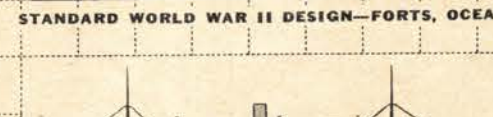
MODERN FAST "CLAN" LINE FREIGHTER



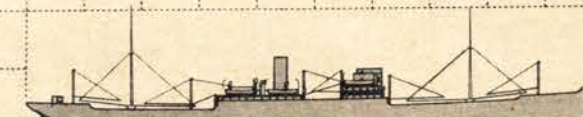
MODERN SPLIT-SUPERSTRUCTURE FREIGHTER



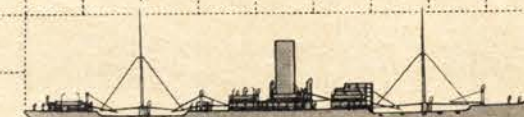
STANDARD WORLD WAR II DESIGN—FORTS, OCEANS, EMPIRES



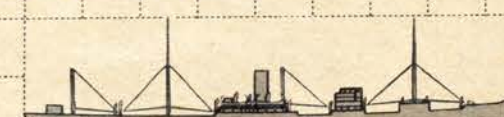
MODERN SPLIT-SUPERSTRUCTURE FREIGHTER



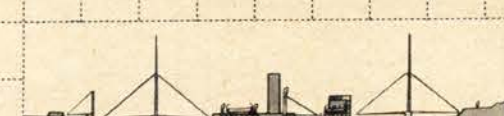
OLD "GLEN" FREIGHTER



BLUE STAR FREIGHTER



OLD BANK LINE FREIGHTER



OLD SPLIT-SUPERSTRUCTURE FREIGHTER

### TANKERS



MODERN TANKER

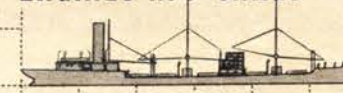


MODERN TANKER



OLD TANKER

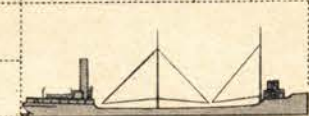
### ENGINES-AFT CARGO



SMALL BULK CARRIER 1



SMALL BULK CARRIER 2



SMALL BULK CARRIER 3

Shown in outline on these pages are 44 U. S. and British merchant ships arranged according to six standard types—passenger, passenger cargo and cargo vessels, tankers, colliers and trawlers. Presented in the January issue of the *Journal* according to function, these types are now broken down even more specifically to enable observers to distinguish them from Axis shipping.

It is impossible to illustrate on a single chart all of the merchant designs now sailing in United Nations convoys. Hence the *Journal* has concentrated on those designs which were built in such quantity as to make their quick recognition essential.

With the tremendous wartime need for new ships, concentration on standard designs has become imperative (for example, there are now well over 2,000 Liberty ships). It should be borne in mind that many ship types are common to more than one nation and that nationalities of individual merchant ships often cannot be distinguished. This preliminary concentration on common U. S. and British designs should, however, materially assist students of recognition.

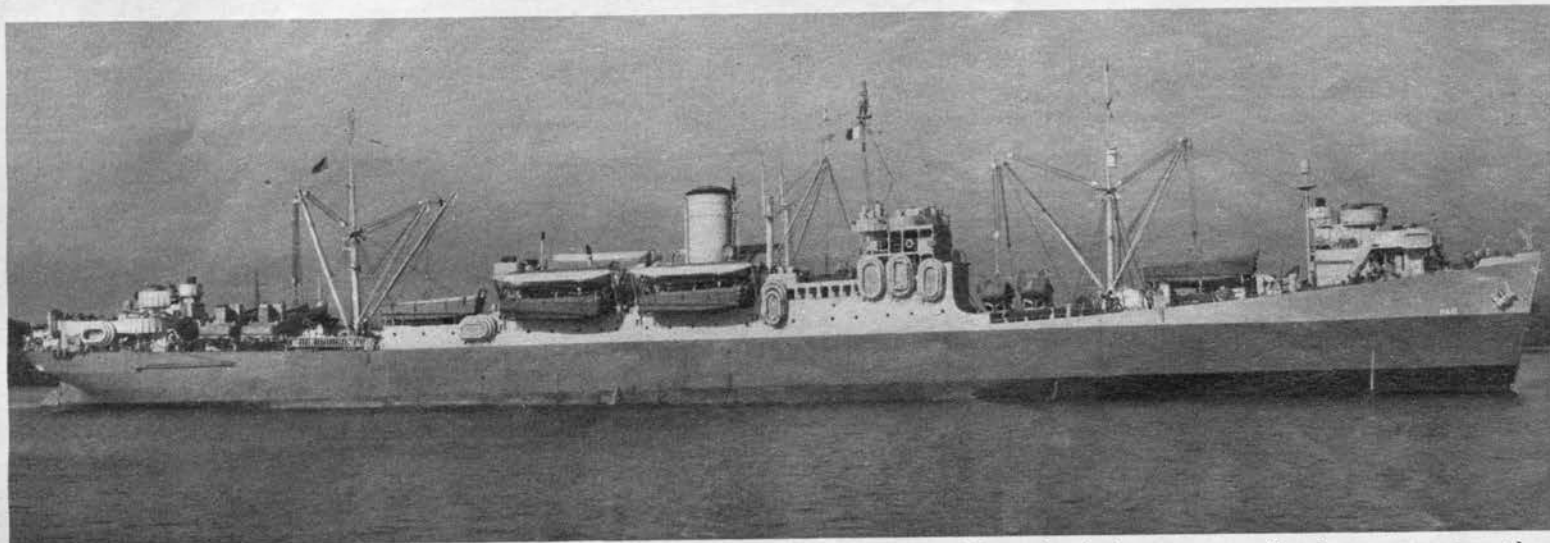
SCALE: EACH SQUARE EQUALS 50 FT.





**Near Safi**, off the coast of French Morocco, three standard types of U. S. merchant ships lie at anchor. In the foreground is a U. S. Shipping Board transport of the same vintage as the World War I Pres-

ident Liner at the top of the opposite page. To the left is a Maritime Commission passenger-cargo ship with a C-3 hull like the ex-African Comet, also on opposite page. C-3 cargo (see p. 32) lies close to shore.



**Ex-Baltimore Mail Liner** is one of five sister ships that were taken into the Navy in 1940 as attack transports. These former passenger-cargo vessels operated between U. S. ports as early as the last war.

They have good lines for their age; except for the counter stern they do not bear the stamp of World War I shipbuilding. It is unusual to find the modern raked bow combined with the old-time counter stern.



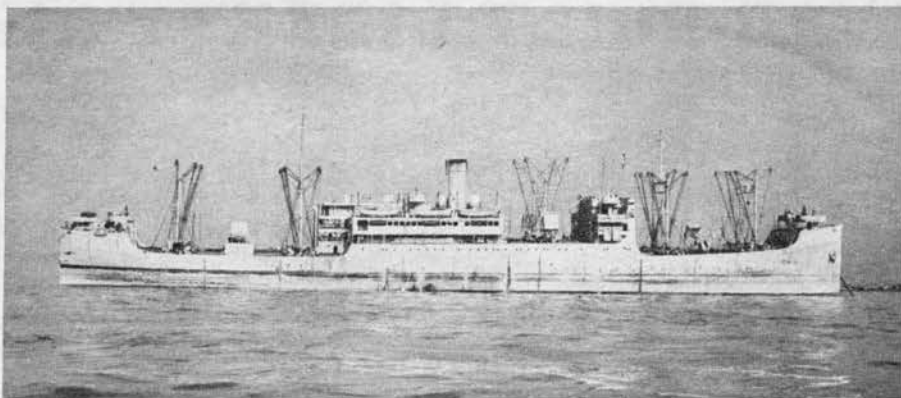
# U.S. BUILDS WAR FLEET

In the 15 years between 1922 and 1937, only two dry-cargo freighters and a few tankers and passenger vessels were built in the U. S. When the Maritime Commission was established in 1936, there were only ten shipyards and 46 ways capable of producing large ocean-going ships and of these half were engaged in naval construction. Today the industry employs two million workers at an estimated annual pay roll of six billion dollars.

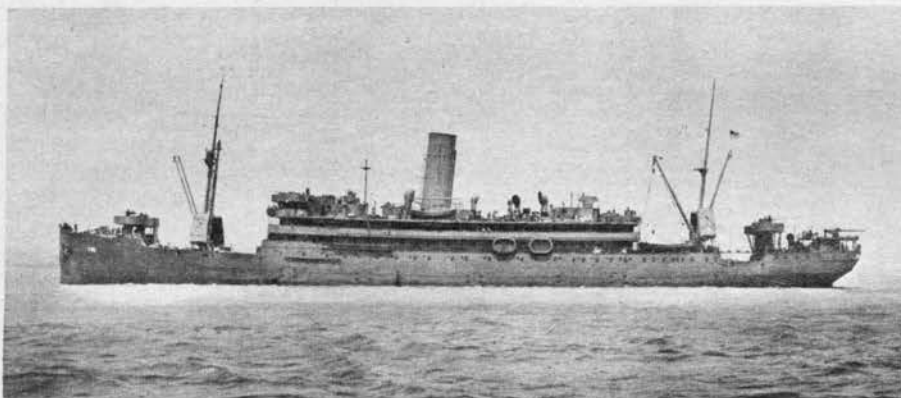
This phenomenal growth has been supervised by the U. S. Maritime Commission which has built thousands of merchant vessels. As more and more ships slide down American ways, USMC ships are becoming the commonest sight in the war's sea lanes.

Numerically most important is the Liberty ship. Adapted from a British tramp, the Liberty is a 10,500-ton, 442-ft. freighter capable of 11 knots. The hull is simplified, prefabricated; the power plant, slow but readily available reciprocating engines. Now coming down the ways is the faster Victory ship. This, too, is mass-produced. Its turbine propulsion will make it much faster, better adapt it to long Pacific runs. The Victory will be much superior to the Liberty for postwar service.

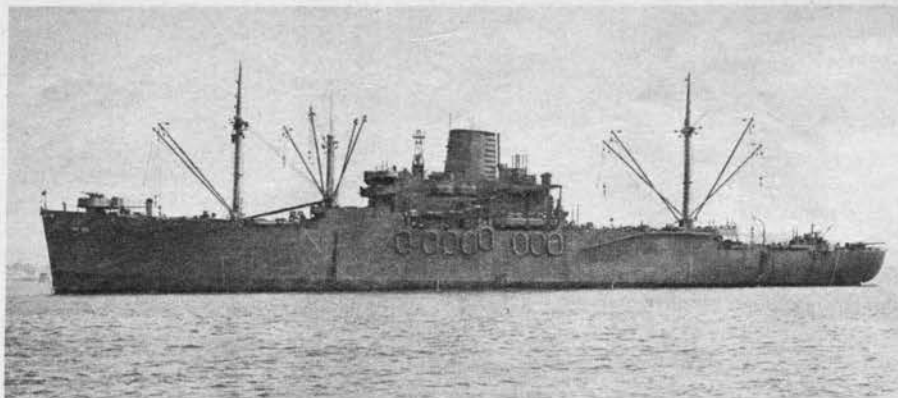
Besides these two mass-produced types, the USMC also has four standard cargo types—the C-1, C-2, C-3 and C-4; two transports—the P-1 and P-2; three tankers—the T-1, T-2 and T-3, as well as tugs, barges, seaplane tenders and auxiliary carriers. Most of these designs go back to the prewar program of the Commission and, although they have more refinements than the wartime types, they also are being built in considerable numbers. With the exception of a few minor vessels, all of these important recognition classes are shown on this and the following pages.



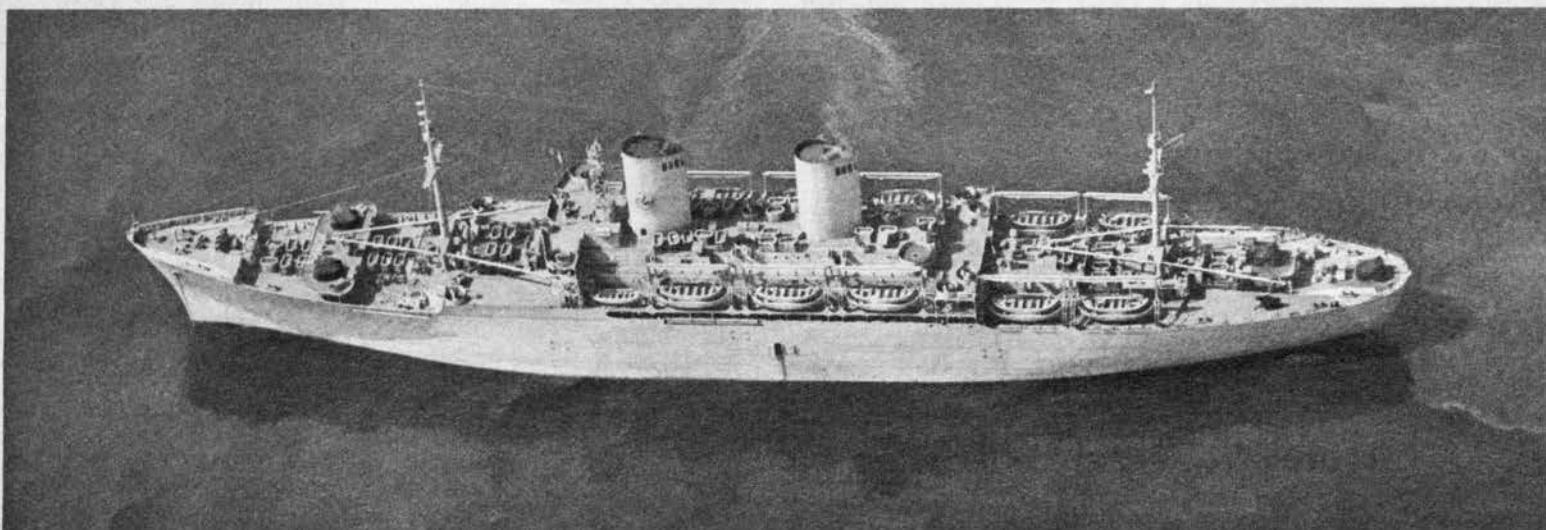
**President Liner** built by the U. S. Shipping Board is now an Army hospital ship. Prominent well deck, tall stack, plumb bow and stern, and split superstructure are marks of its age, nevertheless it is still sturdy enough to serve in the war effort.



**United Fruit Liner** represents a large group of fruit and passenger ships that were built in the '20's and earlier for South American trade. Most are now naval store ships, have large superstructure and unusual short well deck abaft the mainmast.



**Sleek ex-African Comet** was the world's first all-welded passenger liner. A USMC passenger-cargo design, she was built in 1941 on standard C-3 hull for the American-South African Line. This ship has now been refitted as a fast troop transport.



**Troop transports** of the "General" class are new Maritime Commission P-1 designs that are the equal of any passenger-cargo ships afloat. Fast, economical, comfortable, they will be especially valuable for the

postwar Pacific trade. "Generals" have a number of distinctive recognition features, including two very tall, teardrop-shaped stacks; two tall masts; long, stepped-up superstructure; and pronounced clipper bow.



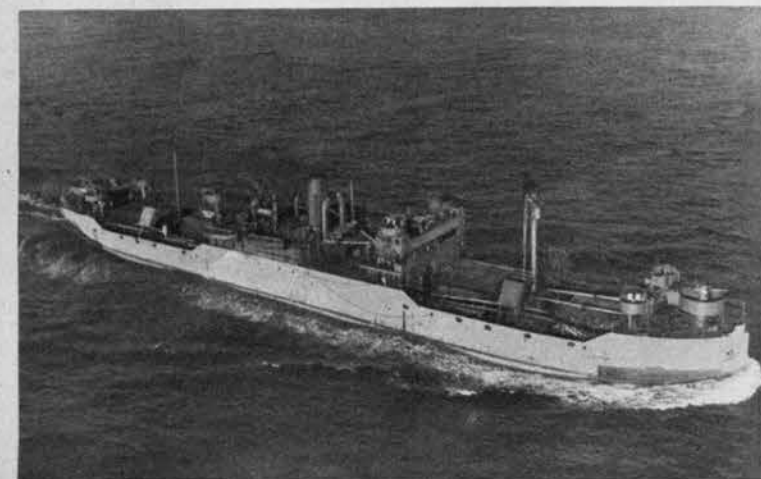
# WAR-BUILT LIBERTY AND VICTORY SHIPS

# AUGMENT VESSELS OF U.S. SHIPPING LINES

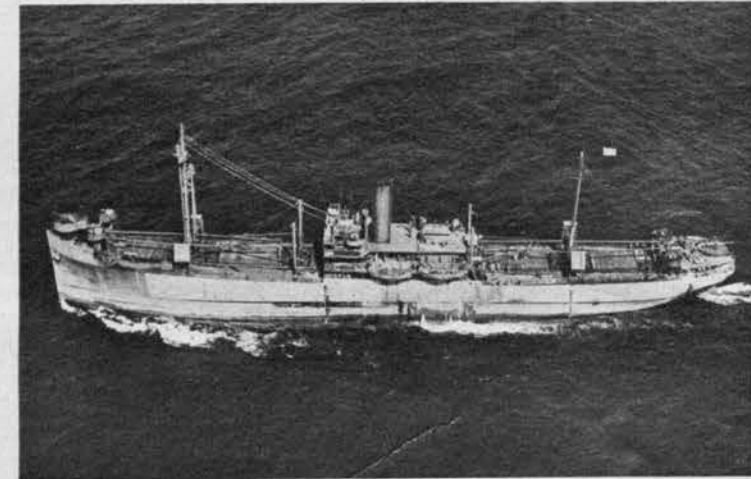


**Lying at anchor** in Salerno harbor are two U. S. Liberty ships of a convoy which brought in supplies for the invasion forces of the Allies. Prefabricated, mass-produced and launched at the rate of five a day,

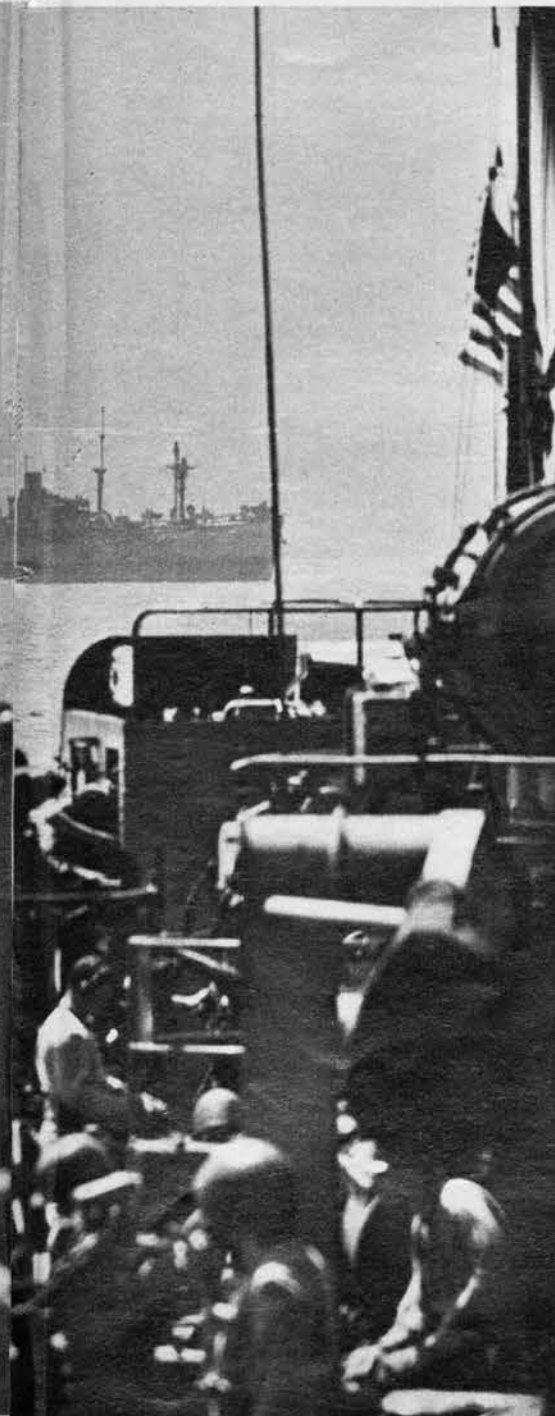
these cargo wheel horses, over 2,000 of which have been built, are the miracle of shipbuilding in World War II. Liberty ships are easy to recognize by their flush deck, lid-topped funnel, heavy T-shaped



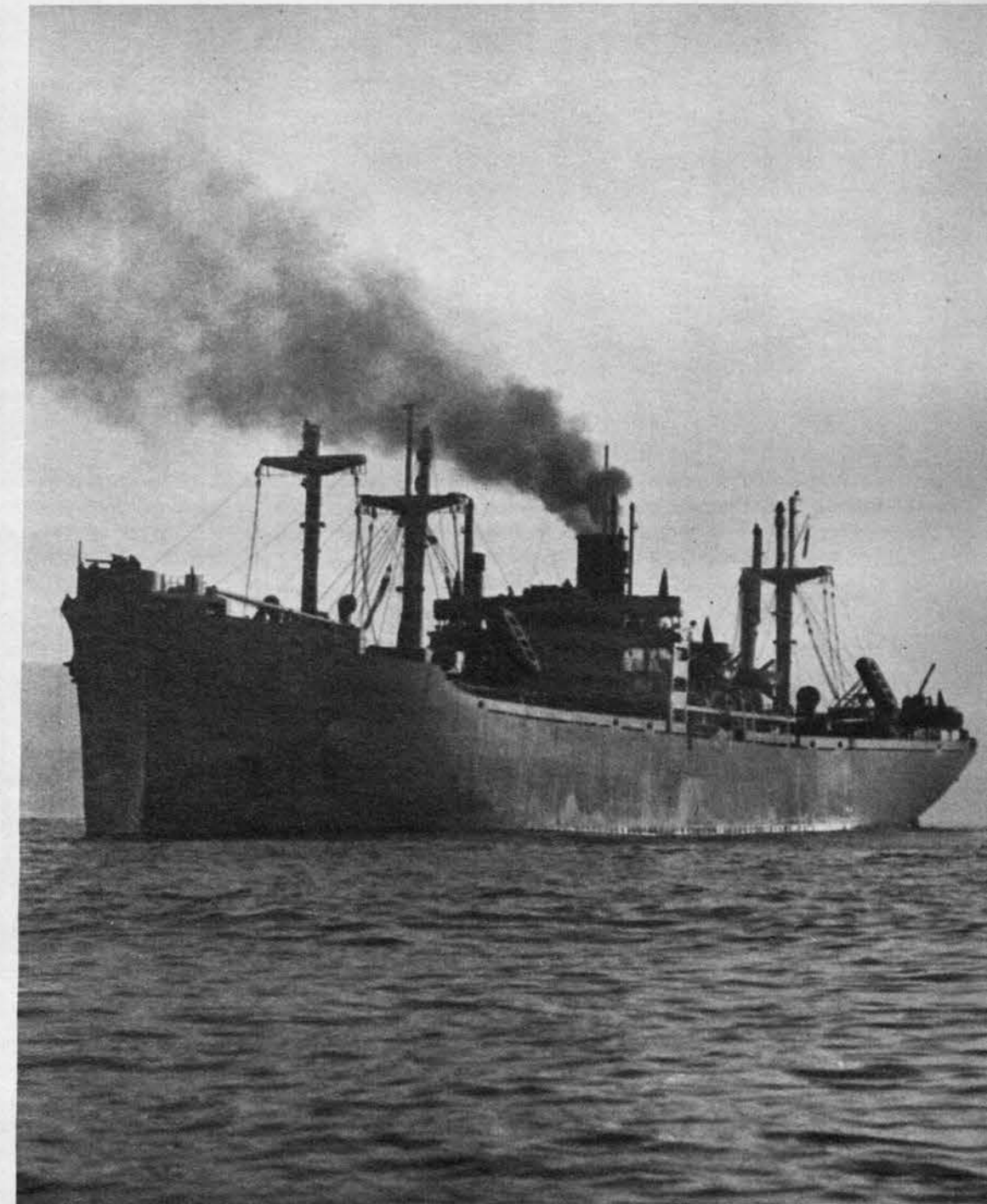
**Hog Islander**, the Liberty of World War I, once more travels North Atlantic convoy course. Although her straight hull, plumb bow and well deck make her ugly, she is nevertheless a sturdy, and long-lived ship.



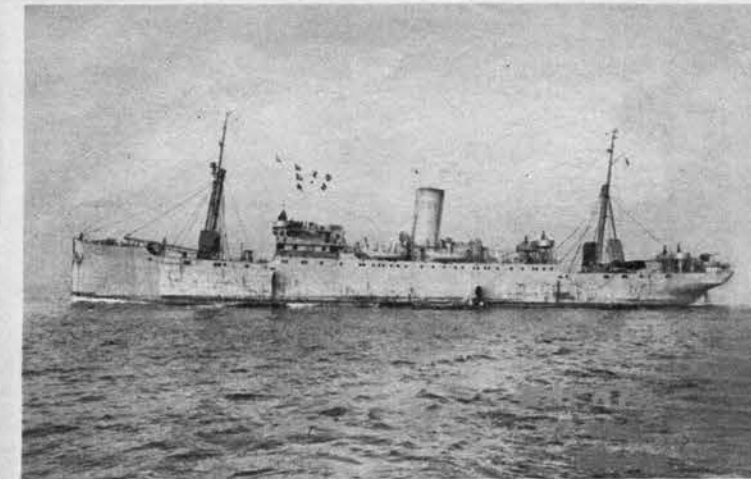
**Typical old freighter**, built in the last war by the USSB, belongs to the American-Hawaiian Line. It has composite superstructure, raised forecabin, large hatches, and kingposts slightly forward of the bridge.



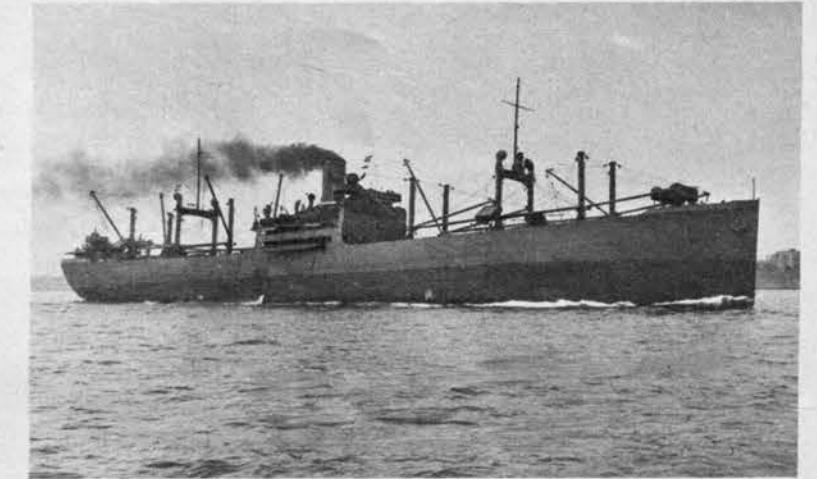
Sampson posts, stocky ventilators, generally cluttered block super-structure. In center background is World War I President Liner.



**S.S. China Victory** is the first of the new 10,500-ton class of emergency shipping to be known as Victory ships. Designed as the Liberty's successor, the Victory is faster, is longer and wider, has a taller, thinner stack set farther forward on superstructure and a long raised forecabin.



**Ex-United Fruit Liner** (West Indies, Central America), built in 1909, has tall stack, plumb bow and counter stern of its era. Long super-structure lined with portholes resembles an extended center island.



**Luckenbach Liner** belongs to a large family of flush-deckers built for cargo service after the last war. They have remarkably clean lines; are easily recognized by kingposts with arched crossbeams, cruiser stern.

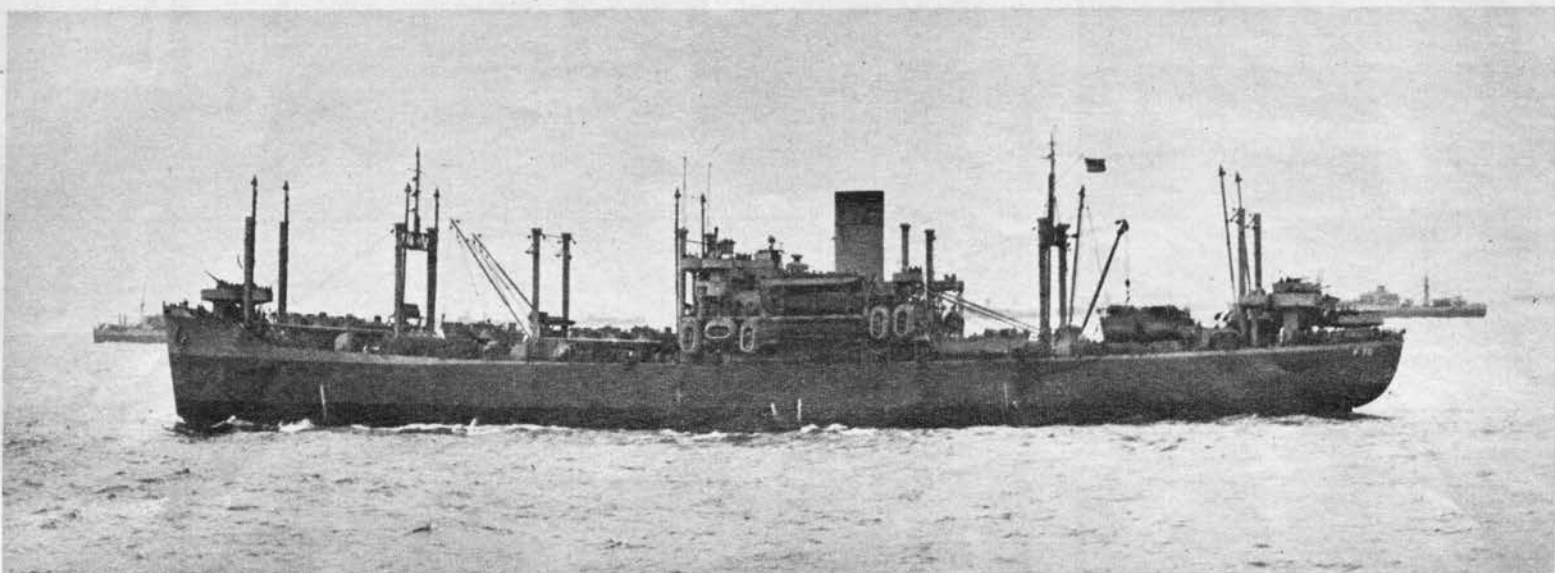


# USMC DESIGNED FINE STANDARD HULLS



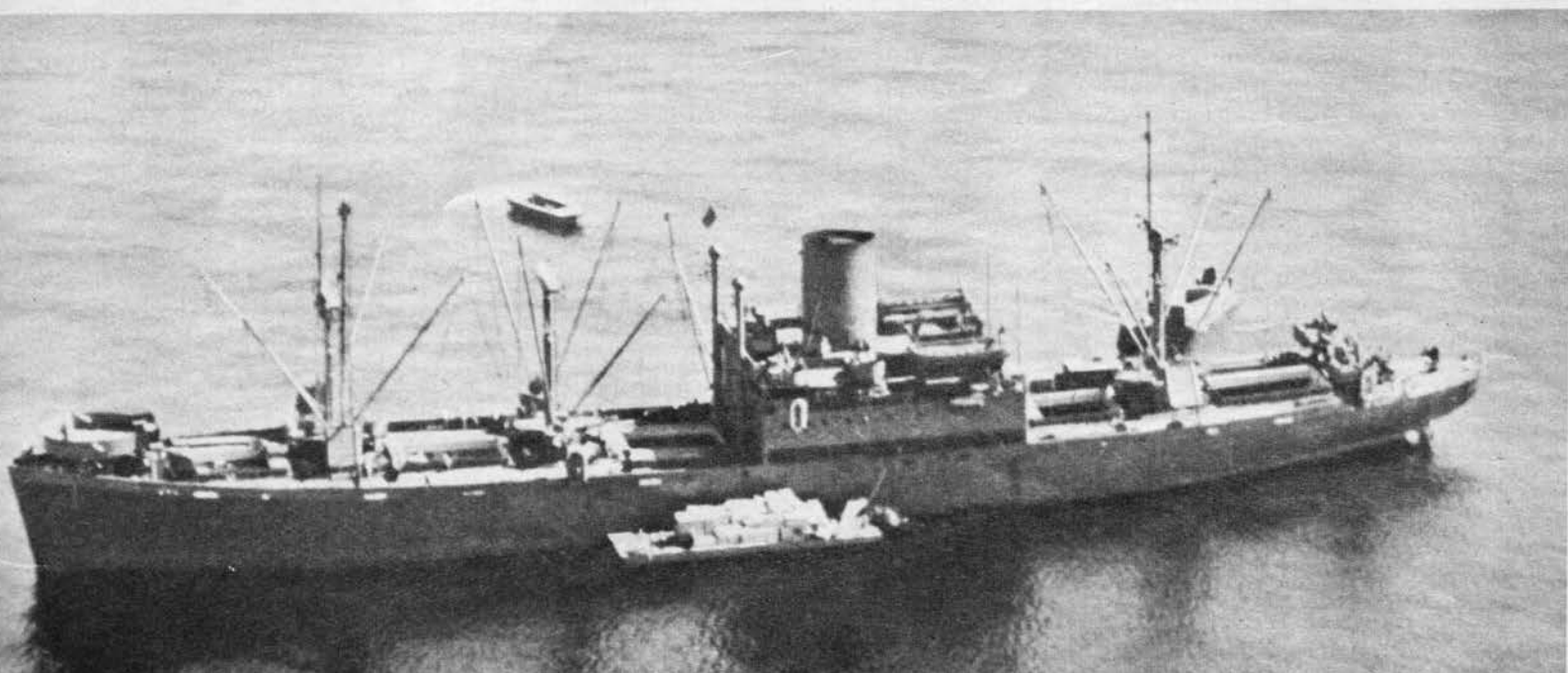
**Maritime Commission's** first design was the C-2 cargo vessel, a fast freighter with a gross tonnage of 6,100. It has sufficient fuel capacity to cross the Pacific and return on one bunkering, may be either

steam or Diesel propelled. Many C-2's have been converted for use in the Navy as attack cargoes. Their hulls are frequently flush-decked except for a raised island with blocklike superstructure aft of amidships.



**Largest and fastest USMC freighters** are the C-3's, many of which have been converted into troop and repair ships, tenders and Bogue Class escort carriers. The same hull design has been used in a class

of C-3 passenger-cargo ships (p. 29). The C-3's are flush-decked except for small raised forecastle, have many kingposts. Newest, most versatile USMC freighter, the C-1 (*below*) can enter even the smallest port.



SMALL USMC C-1 IS FLUSH DECKER LIKE LIBERTY, WITH COMPOSITE BLOCK SUPERSTRUCTURE AFT OF AMIDSHIPS, HEAVY SAMPSON POSTS, TWIN KINGPOSTS

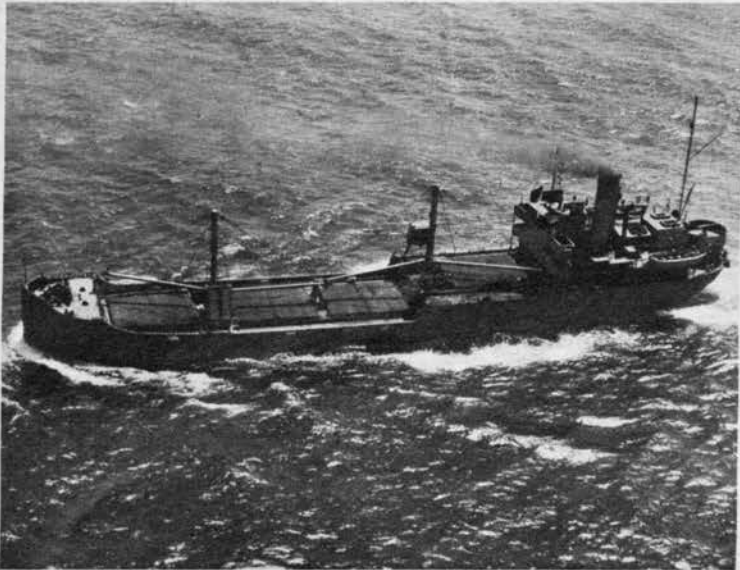


# ENGINES-AFT FUEL AND CARGO TYPES

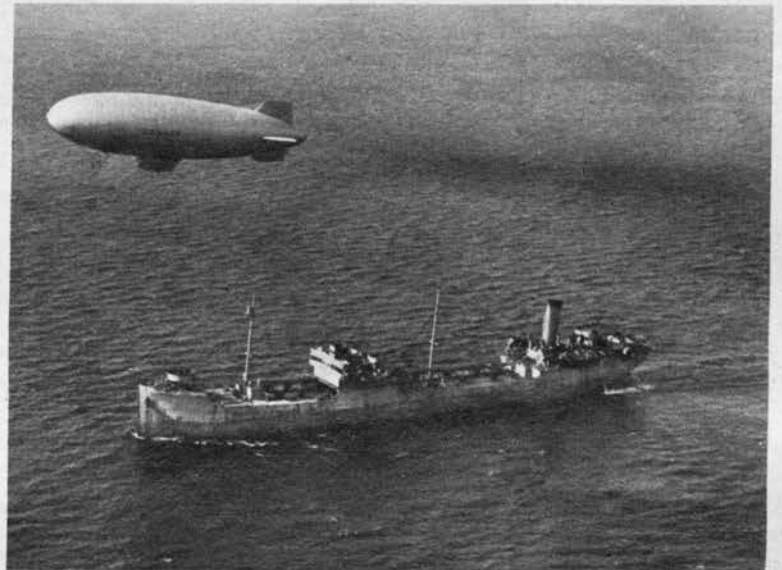


**Fleet oiler** of USMC T-2 design is hauling in her pumping hose after refueling a cruiser. Observe how waves break over her weatherdeck as she rides low. Fast, long-range T-2 tankers are designed to follow the

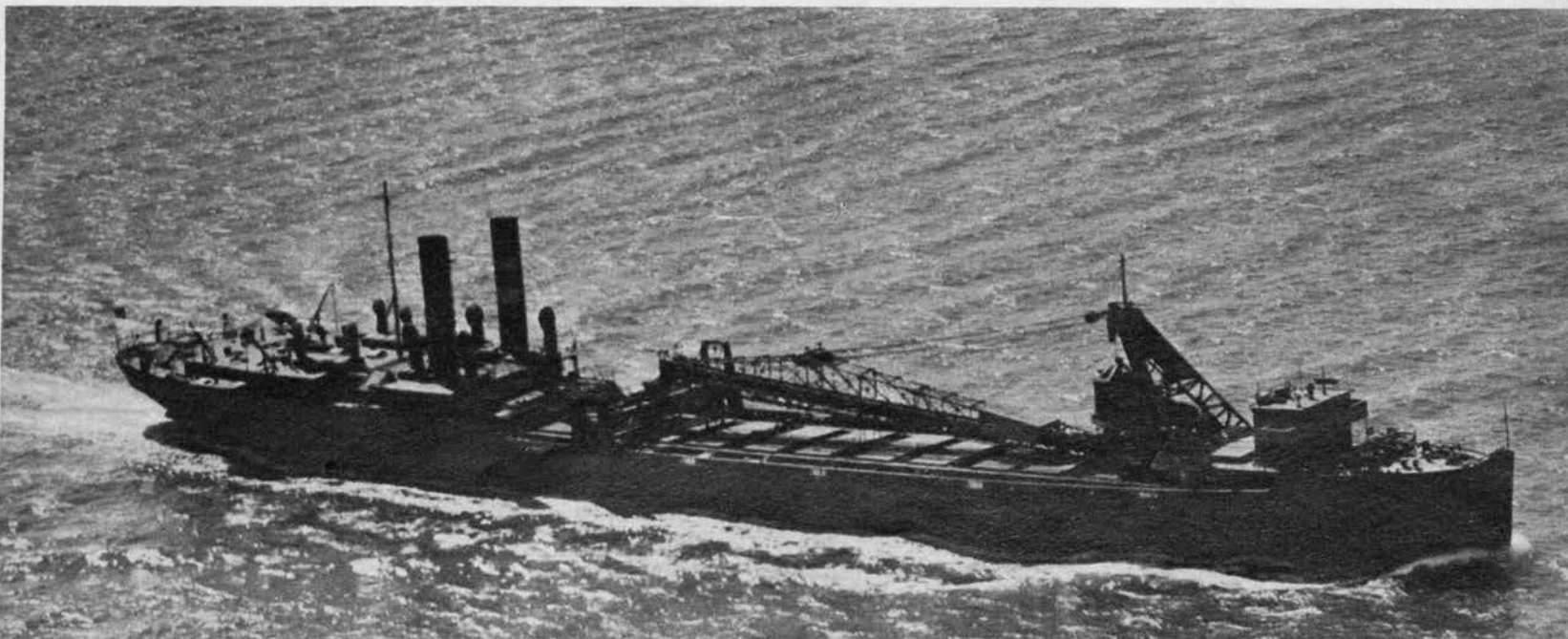
fleet, can carry millions of gallons of oil of different grades. The main deckhouse and stack are well aft. The bridge is set on a raised deck forward of amidships. In the background is Independence Class CVL.



**Small engines-aft coasters**, like the M. & J. Tracy, have large cargo hatches in which they carry all kinds of shipments in peacetime between Eastern U. S. ports. These small ships usually burn coal.



**Socony-Vacuum three-island tanker**, built in 1916, differs from the USMC tanker at the top. Older ship has taller stacks, counter stern, plumb bow, lacks kingposts modern tankers use in handling fuel lines.



COASTAL OR GREAT LAKES CARGO CARRIER HAS SELF-UNLOADING CRANE ON FORECASTLE, TWIN AFT STACKS SET ATHWARTSHIPS, PROMINENT HATCHES





OLDER FREIGHTERS OPERATED BY BRITISH SHIPPING COMPANIES ARE CHIEFLY DISTINGUISHED BY THEIR SPLIT SUPERSTRUCTURES. THE SLOW SPEED OF THE OLDER SHIP

## BRITISH BUILD VARIED TYPES

Many of the ships built in American shipyards are being allotted to British operators, but a large proportion of the United Nations' merchant fleet is made up of ships from British private shipping lines. A number of these lines developed a favorite design which they then had manufactured in quantity. As a result, large numbers of British ships have a strong family resemblance. For example, Blue Funnel Liners are clearly Blue Funnel

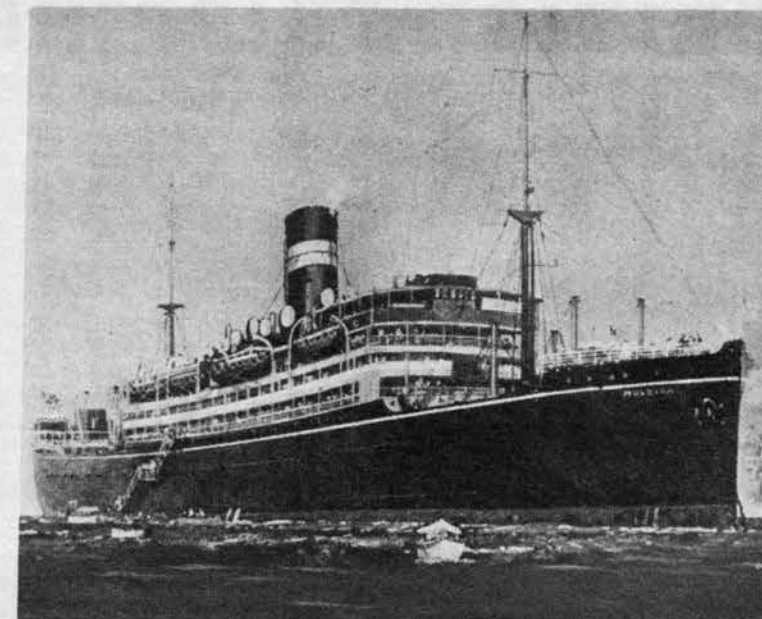
PANORAMA OF ALLIED CONVOY (BELOW) CONTAINS SEVERAL TYPICAL BRITISH SHIPS (NOTE SPLIT SUPERSTRUCTURES). THOUGH NUMEROUS KINGPOSTS MARK THEM AS



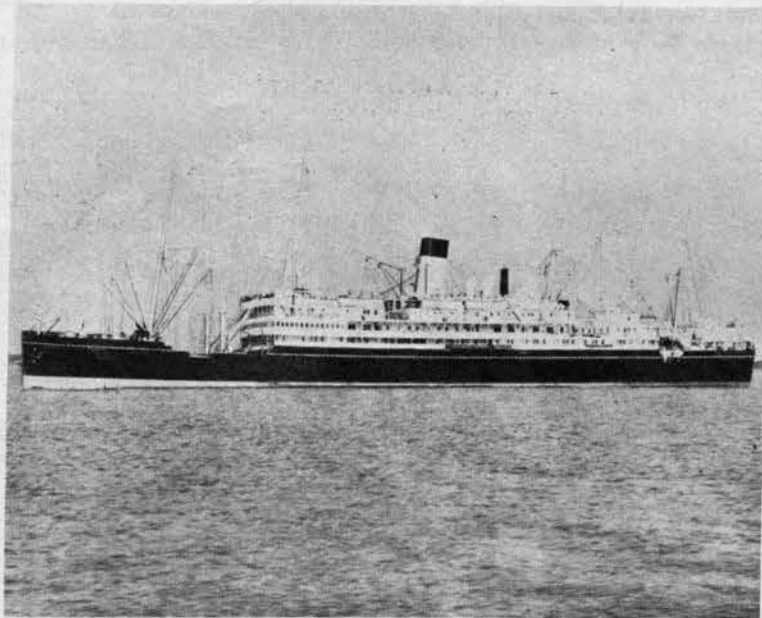
(LEFT) IS INDICATED BY PLUMB BOW, COUNTER STERN AND TALL UPRIGHT STACK

Liners; Clan Forbes and Clan MacArthur, clearly Clan Line freighters. Though most British shipyards are taken up with naval construction, the Admiralty has developed some standard merchant types. To compare with our Liberties, the British have the Ocean, Fort and Empire classes (see p. 39); a new fast cargo design of 12,000 tons (comparable to U. S. Victory ships), is now coming down British ways. All help make the Allied fleet the world's most formidable.

CARGO CARRIERS, THOSE IN FOREGROUND PROBABLY ALSO CARRY PASSENGERS



British India Company's colonial traffic was carried on by passenger-cargo ships built since 1911. These ships are distinctive for their large superstructure, prominent stack and two extremely tall masts.



Derbyshire of the Bibby Line, built in 1935, has four large masts—a carry-over from old sailing vessels—and intricate rigging. It is now a troop and ammunition ship capable of making speeds of 16 knots.

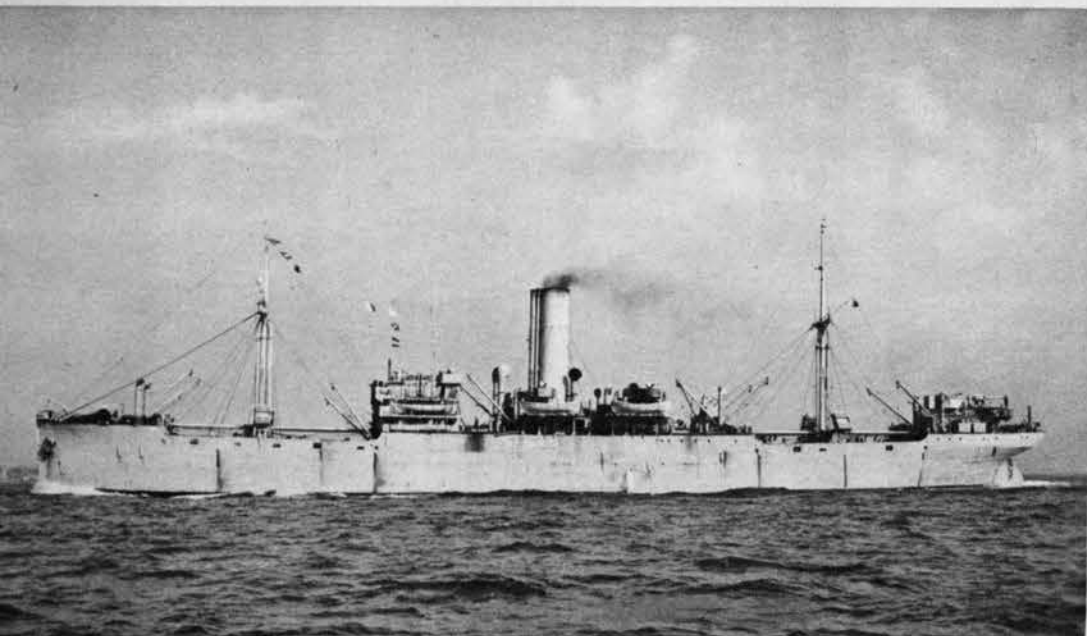


Royal Mail Liner derives considerable government subsidy from carrying mail on passenger-cargo ships. Highland class illustrated is comfortable two-stacker with unusual break in forward superstructure.



# BRITISH SHIPPING LINES' FAVORITE

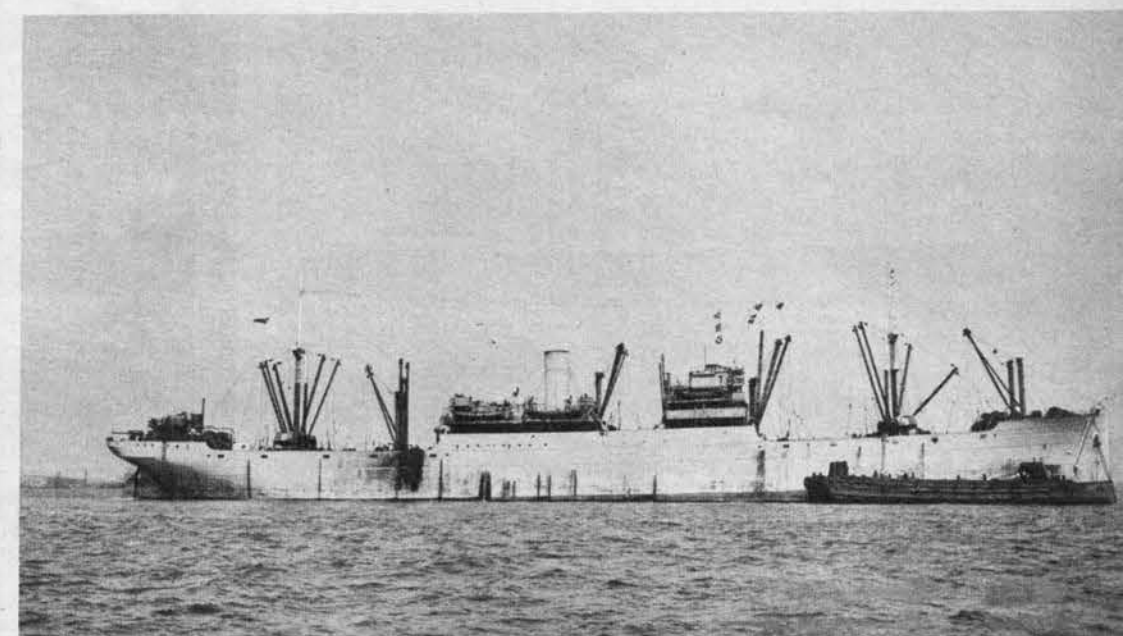
# SHIPS HAVE SPLIT SUPERSTRUCTURES



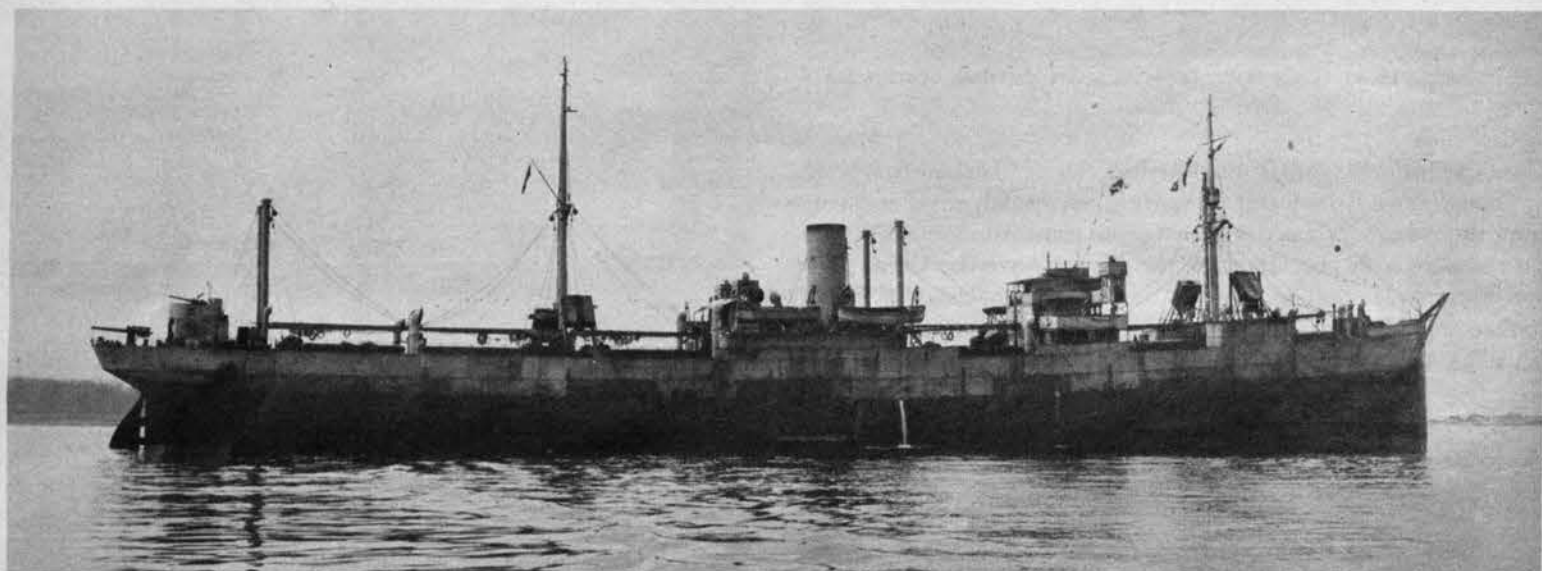
**"Blue Funnel" Liners**, seen wherever ships go, are easily recognized in peacetime by a large, vertical funnel painted blue with a black band on the top. All "Blue Funnelers" are named for mythological Greek heroes, have well deck and prominent ventilator kingposts.



**Vast Ellerman Line** sails ships named after the large cities of the world. Built over a period of 25 years for the British colonial trade,

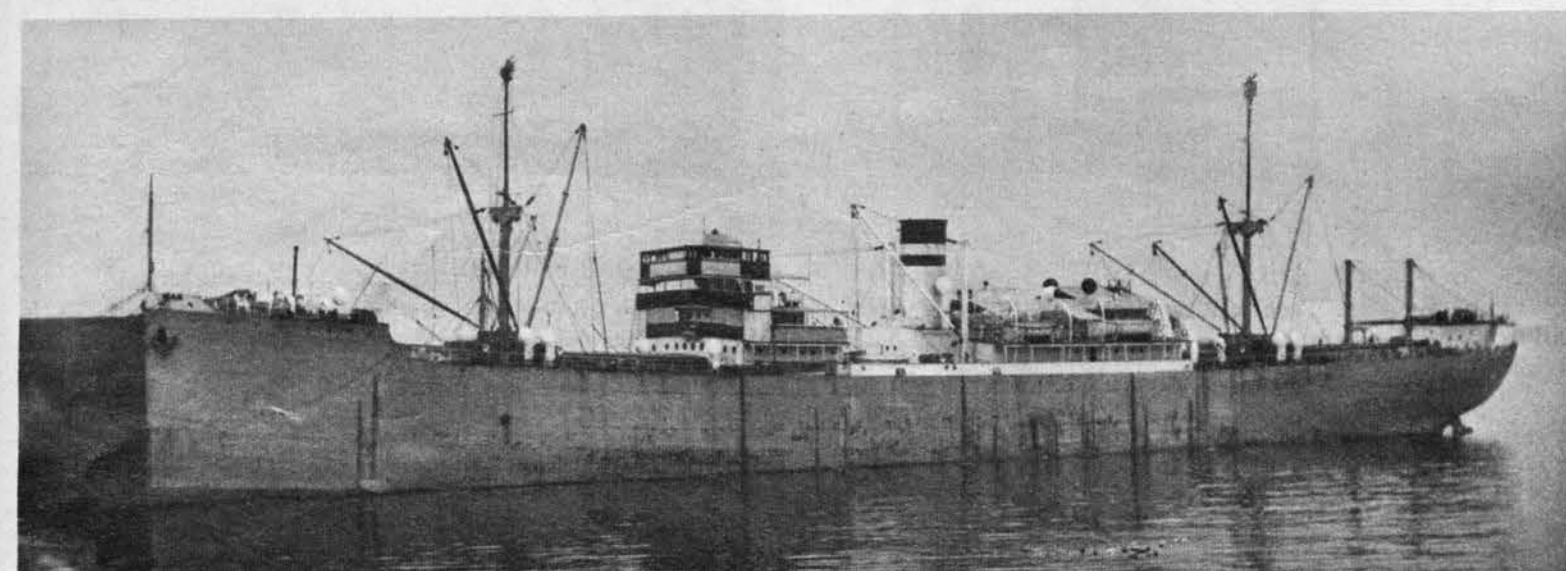


**Glen Line** freighter, which was completed in 1922, was among the first British motor ships. Its well deck is common to all Glens. Other features are numerous heavy booms and kingposts and such old marks as plumb bow, counter stern, tall stack and general angularity.



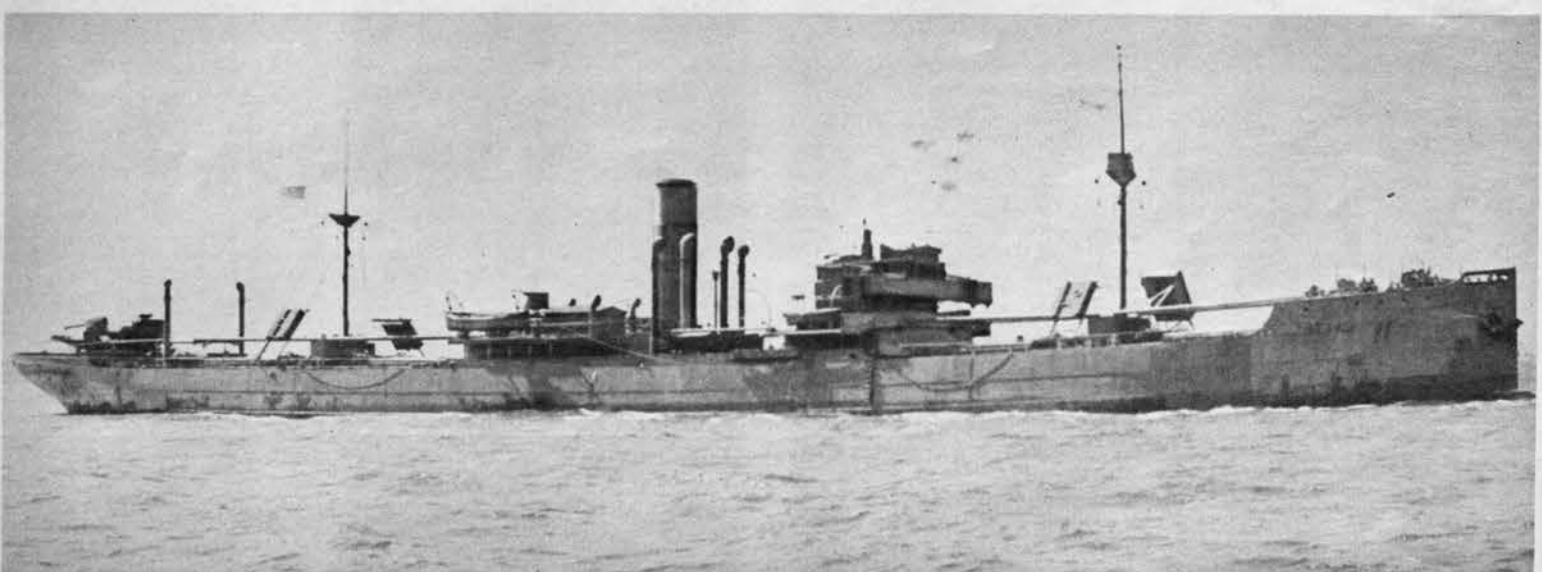
**"Bank Line"** freighters, so-called for suffix "Bank" in their names, are mostly motor ships built in the '20's and '30's. They are flush-deckers with the split superstructure typical of their building period,

in peacetime carry all kinds of cargo to all parts of the world. A catwalk has been erected for use by the crew when the weather deck is covered with cargo. Twin kingposts operate bunker hatch next to stack.



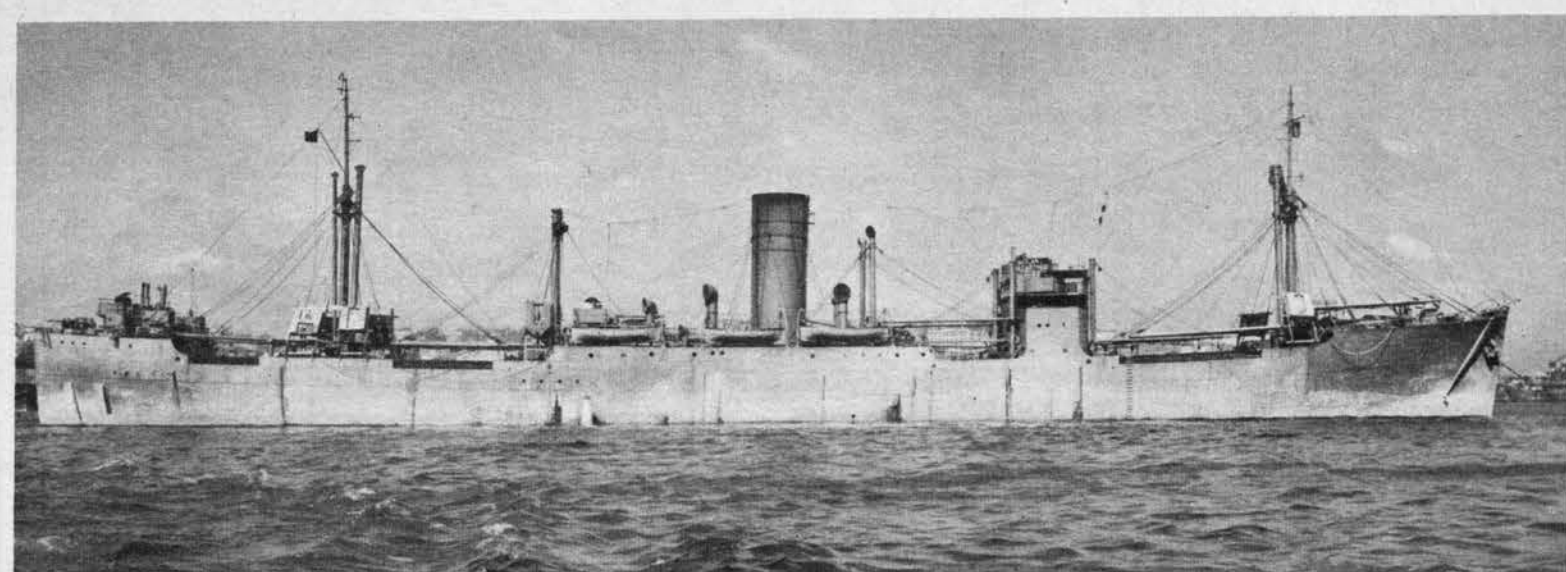
**"Silver Line"** ships, named for common trees with the prefix "silver," were built in the latter '20's for round-the-world service. Most ships of this line have a raised forecastle, plumb bow and cruiser

stern. Some, like the ship above, have large squat ventilators and a split superstructure with clean lines about the bridge. "Silver Liners" are typical small British cargo ships. Some have refrigerated holds.



**Court Line** freighters carry their trade-mark in their tall stack with four close-set ventilator kingposts, raised forecastle and slight hull sheer. These freighters are typical of many other old British cargo ves-

sels with a split in the superstructure between the bridge and the engine house. The basic Court design is a predecessor of the Forts' (p. 39). In peacetime their services were classified as "general tramping."

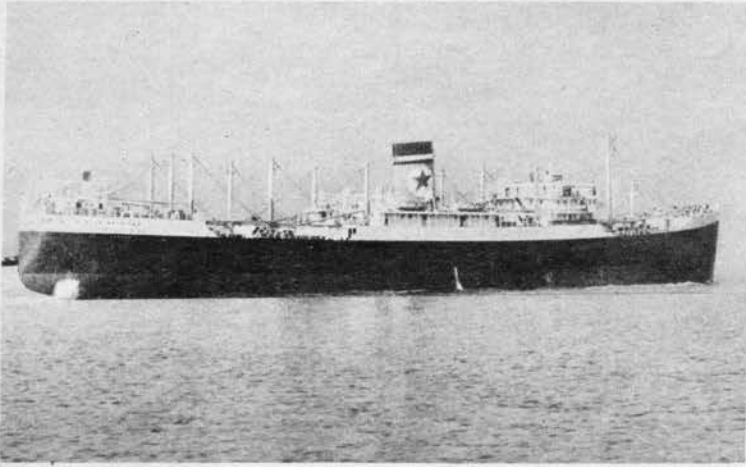


**Clan Line** freighters represent a sizable class of split-superstructure, steam-driven vessels equipped to handle the heaviest cargoes. Most of the "Clans" were built in the '30's; some are capable of high

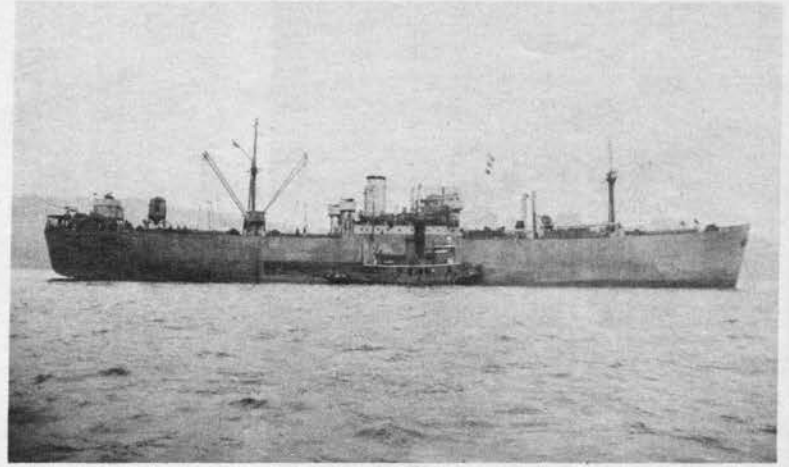
speeds. An unusual "Clan" feature is the well between the bridge and the engine house. The oversize stack is directly amidships. Three-island freighter design offers some protection to cargo in heavy seas.



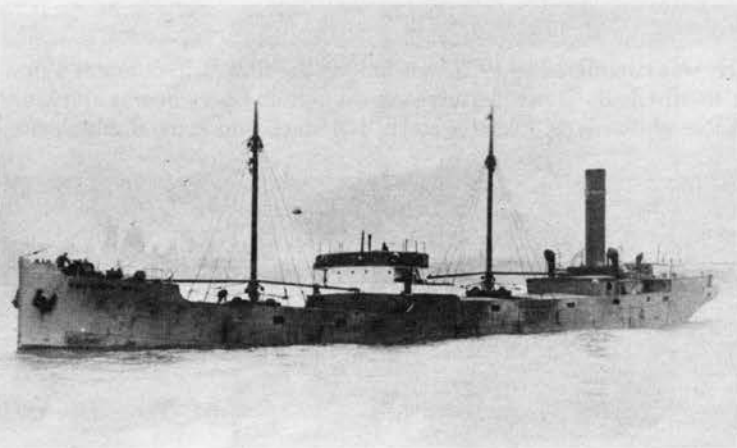
# DIVERSE TYPES SWELL BRITISH CONVOYS



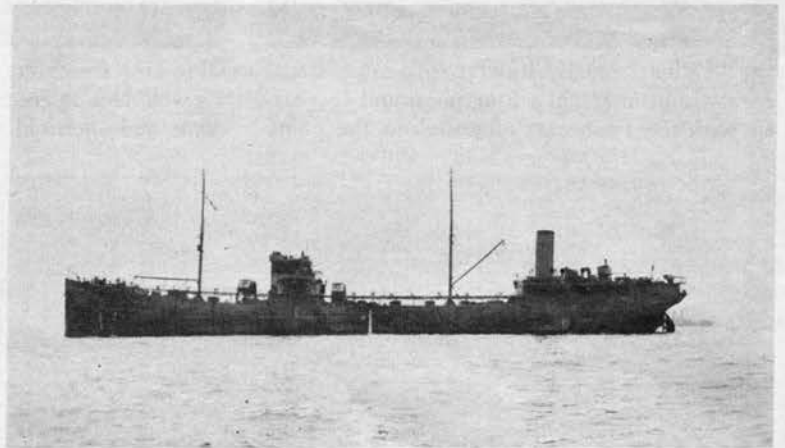
**Distinctive** in peacetime for the blue star on her large sloping stack, the Blue Star Liner is one of Britain's finest modern freighters. She has a split superstructure and numerous kingposts aft; no mainmast.



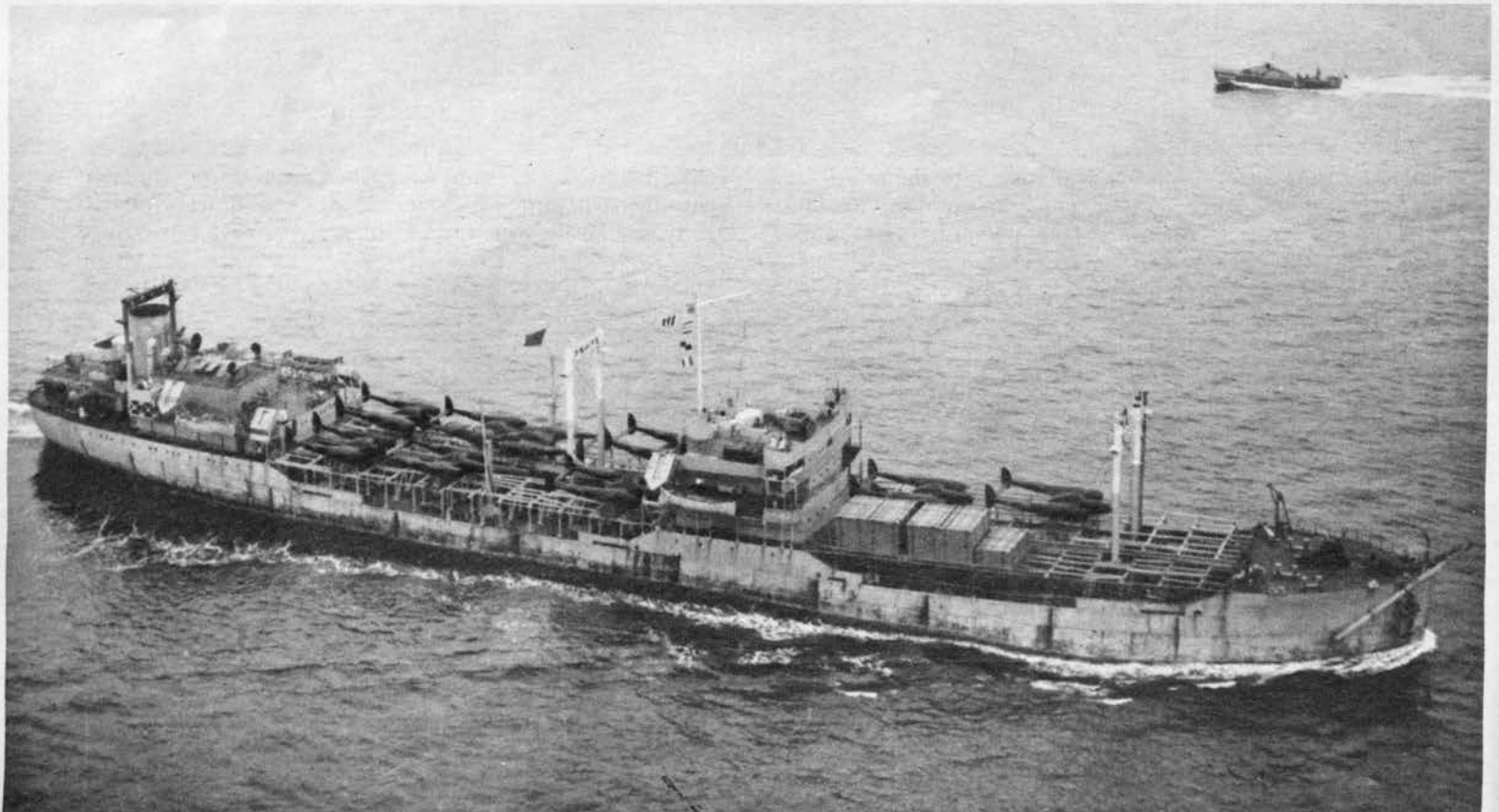
**Large modern freighter**, built in 1936 for tramping service, has a new hull with clean, simple lines, resembling those of modern Scandinavian ships; four large hatches; raked bow; sheer on foredeck and cruiser stern.



**British coaster** of the "Rose" class is a small bulk cargo carrier built in 1930. In spite of her relative newness, this "Rose" has the lines of a typical old coaster—plumb bow, counter stern and a very tall stack.



**Anglo-Iranian Oil Company** charters a great number of old-line British tankers like this three-islander with steam-reciprocating engines. Constructed in '20's and '30's they look like tankers the world over.



**Carrying a deck load** of P-38's, this modern British tanker is like many others that are doing double duty rushing supplies and equipment to the fighting fronts. Compared with the older tanker (*above*

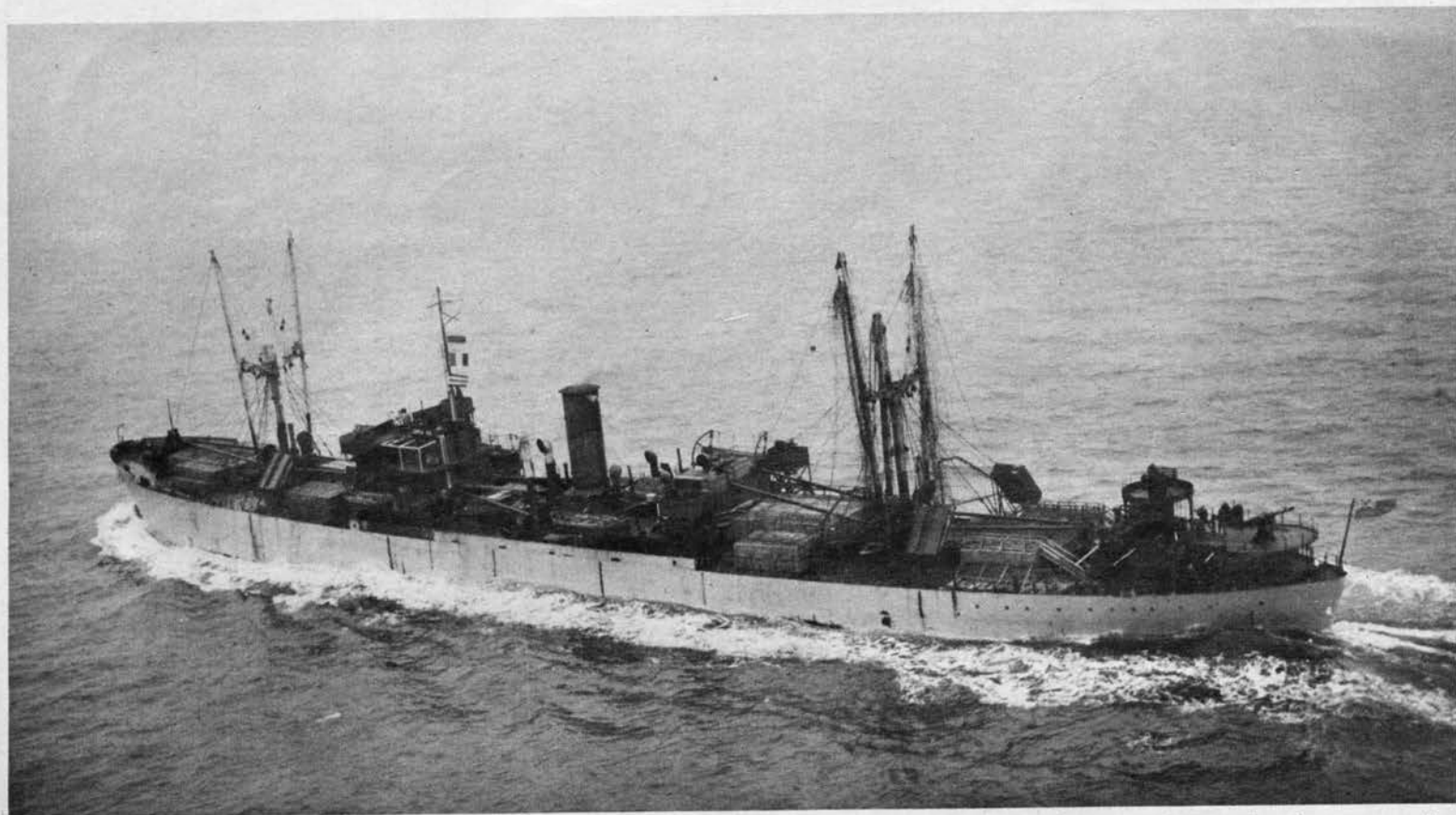
*right*), this one is distinguished by its raked bow, cruiser stern, short fat stack, and streamlined navigation bridge. It has three pairs of goalposts, one just forward of the stack. Most tankers have three islands.





**Salty, weather-beaten trawlers** are now performing wartime coastal shipping service out of all proportion to their small size. In peacetime their high, sturdy bows cut through the heavy seas as they drag

the bed of the ocean with large nets cast from the stern. Equipped with powerful winches for hauling in the nets, the trawlers are adaptable for use as minesweepers. Sometimes they also serve as pilot cutters.

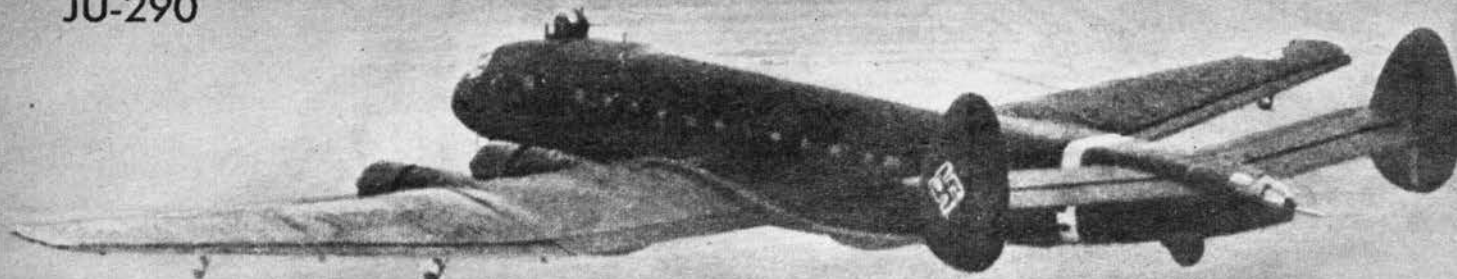


**The British equivalents** of our Liberty ships are the Fort, Ocean and Empire classes, emergency types which the British are turning out on a mass-production basis. The Forts are built in Canada and the

Oceans in the U. S. Roughly the same size, speed and cargo-carrying capacity as our Liberties, they are coal-burning, have split superstructure and a lower deckline. Anti-torpedo nets hang from special booms.



JU-290



TRANSPORT AND HEAVY BOMBER, JU-290 WAS DEVELOPED FROM JU-90 (BELOW), HAS NEW WING, FINS AND RUDDERS. ONE VERSION HAS SQUARISH FINS, RUDDERS

# GERMAN 2ND LINE

Varied types supplement top  
Nazi bomber & fighter force

In addition to the offensive and defensive first-line planes holding the continent of Europe against the assaults of the Allies, the German Air Force, like all air forces, has a line-up of second-string planes. Varied in their duties, they range out from the coasts of Norway, France and northern Italy, shadowing convoys, bombing and torpedoing stragglers; others operate almost entirely in the Russian theater as army cooperation, liaison and reconnaissance planes.

Many of them illustrate the unorthodox aspects of German aircraft development and design. There is, for example, the Ju-86, first warplane powered by Diesel en-

gines. There is also the He-177 whose four engines drive but two propellers. Finally there is the FW-189, an early twin-boom type.

Many of the planes pictured on these and the six following pages may look odd to observers accustomed to U. S. aircraft. Nevertheless they are extremely efficient at their various tasks, have shown a versatility fully in keeping with the Luftwaffe tradition of getting top service from each type. And with their skill at improvisation the Germans may well throw some of these second string planes into the "big league" fight whenever invasion makes critical the position of the already battered Nazi air strength.

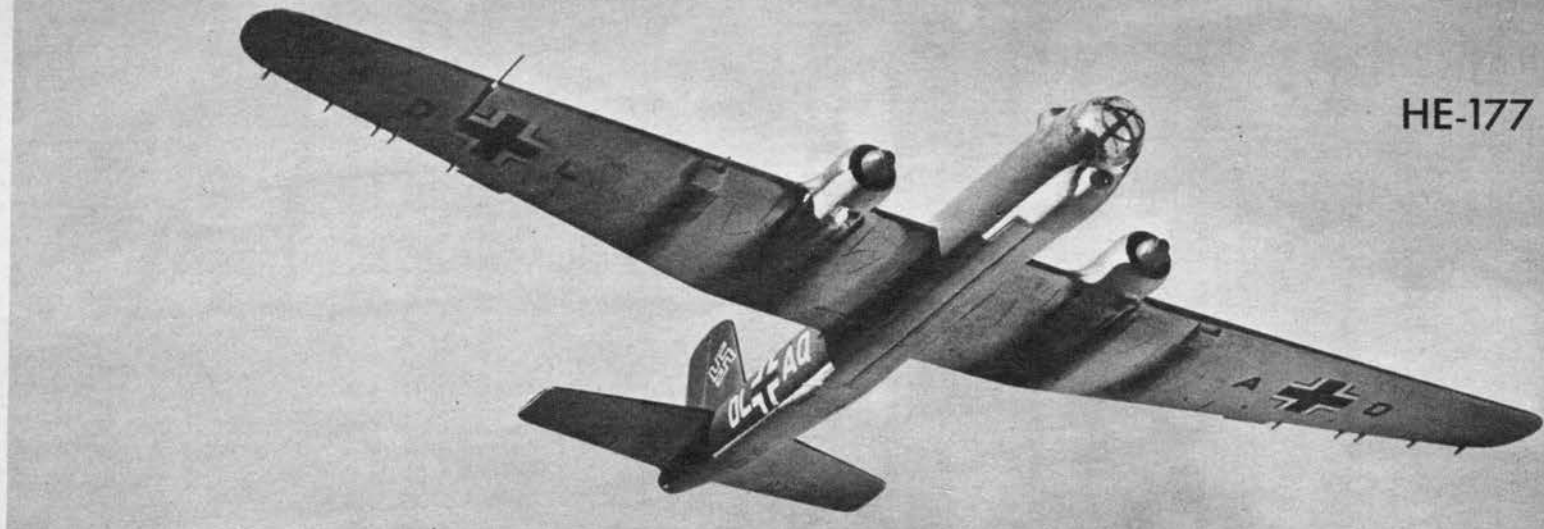
JU-90 GOES DOWN OFF CORSICA, VICTIM OF AN RAF MARAUDER (B-26). NOTE BULKY FUSELAGE, UNUSUAL WING SHAPE. IT CAN CARRY 40 FULLY-ARMED TROOPS

JU-90



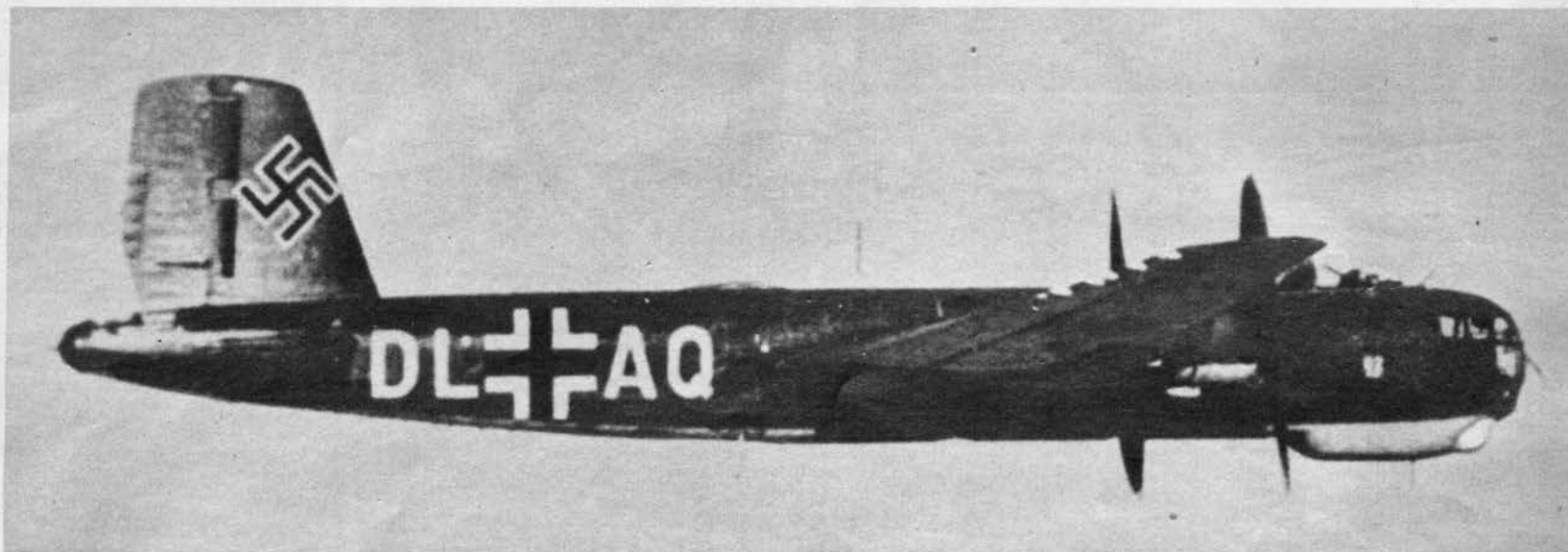


HE-177



**Unorthodox heavy bomber**, He-177 has four inline engines in two nacelles. Though it became operational to a limited extent late in 1941, it

has only recently appeared in moderate quantity. Wing span is about equal to that of the B-17. He-177 is equipped to carry glider bomb.



**Angular lines** of He-177 show no family resemblance to the smoothly curved lines of He-111, formerly one of the Luftwaffe's most impor-

tant medium bombers (see *Journal* for November). Note heavy nose construction, single fin and rudder set forward of tail gun position.

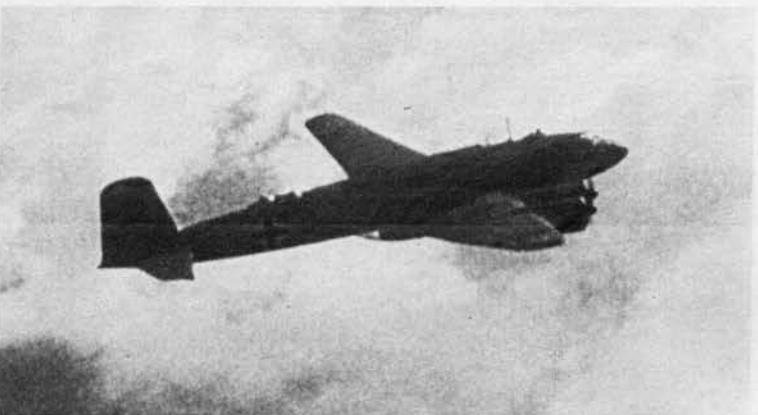
FW-200K



**Focke-Wulf Kurier** is a big, low-wing, four-engine patrol bomber used for long-range sweeps over Atlantic from bases in France and Norway.



**Slender fuselage**, off-center bomb bay under nose distinguish FW-200 from C-54. One of latter was recently taken for Nazi, shot down.

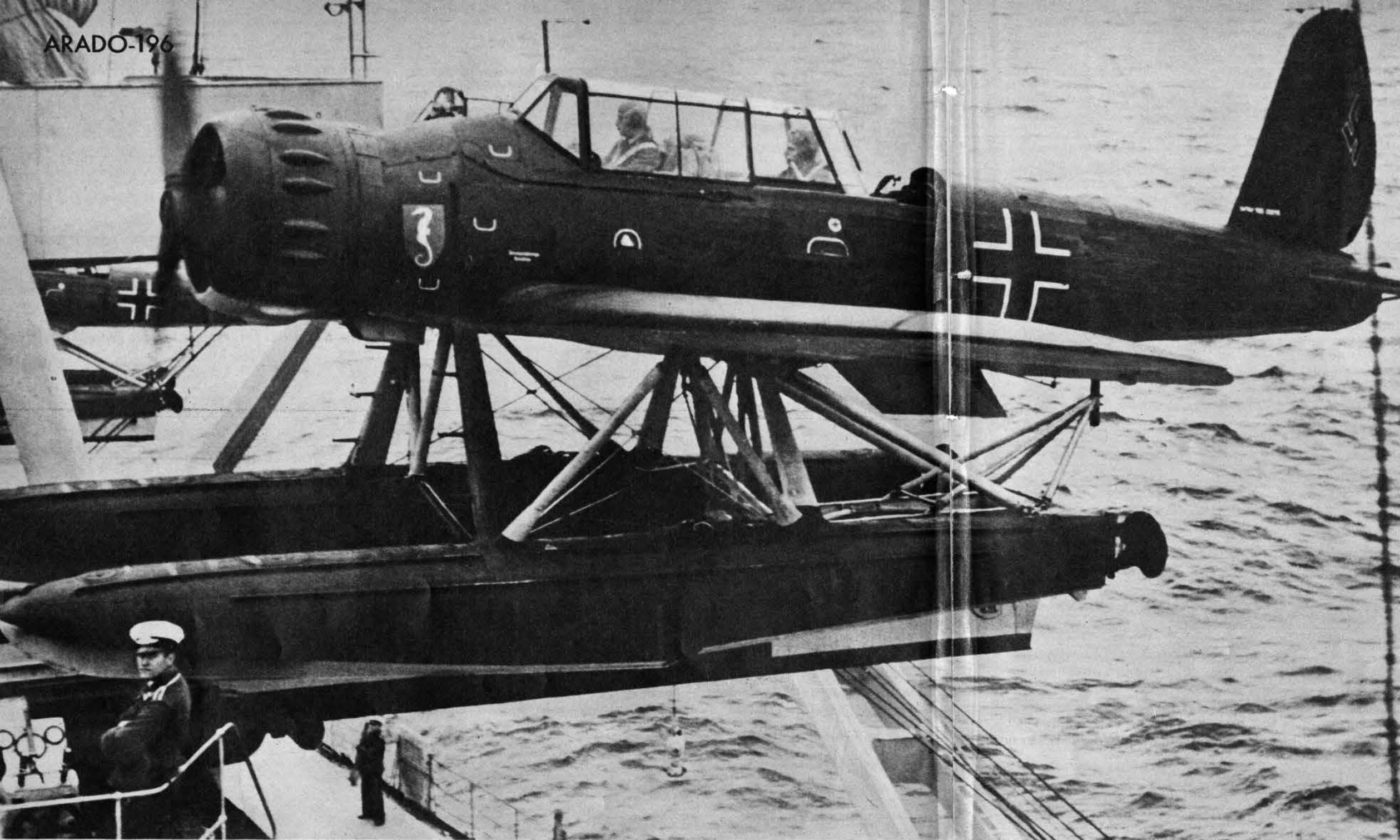


**Angular fin and rudder**, contrast with C-54's tall, rounded fin and rudder, curving well forward and dropping abruptly on trailing edge.



**Flying low**, FW-200's have been used as torpedo planes off North Cape in addition to spotting for U-boat "Wolf packs" far offshore.





Nazi single-engine floatplane, the Arado-196 operates both from catapults and coastal bases. It is used chiefly for reconnaissance but

may attack small ships, slow Allied planes on antisubmarine patrol. Important for recognition are twin floats, single engine, broad wing with

very slight taper, blunt wingtips. Ar-196 is fast, well-armed, quite maneuverable for a seaplane. It carries two cannon, three machine guns.

**BLOHM & VOSS-222**



Huge flying boat, the BV-222 was designed for commercial use. It exists in small numbers as a long-range patrol and transport plane.



Six engines on 150-ft. wing give BV-222 speed of 240 m.p.h. Vast bulk, drooping nose, single fin and rudder are outstanding features.

**BLOHM & VOSS-138**



Odd-shaped hull gives BV-138 apt nickname "Flying Shoe." Used for reconnaissance, it was designed by the creator of asymmetrical BV-141.

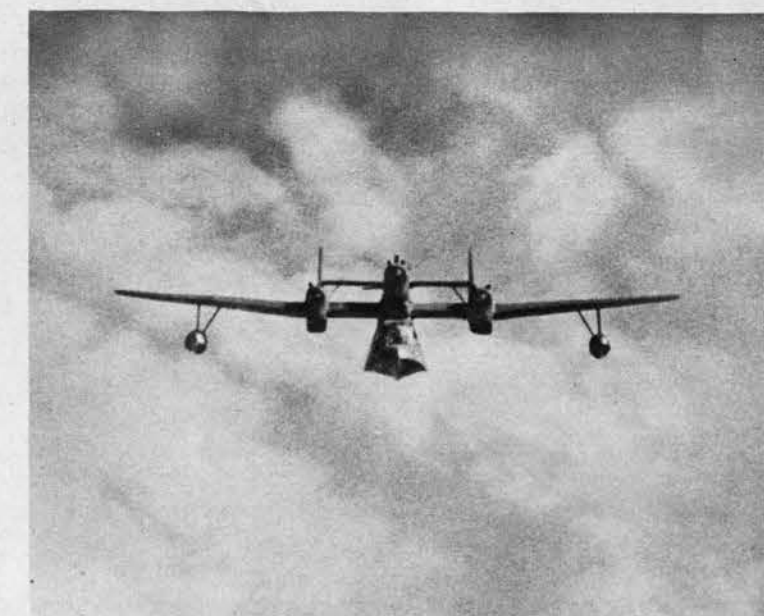
**HE-115**



Heinkel torpedo bomber, He-115 first appeared as a mailplane. Primarily a patrol type, the He-115 launched torpedoes against convoys.



Long nose, twin floats and the wing's tapered leading edge help distinguish the He-115. It was the first Nazi plane to sow magnetic mines.



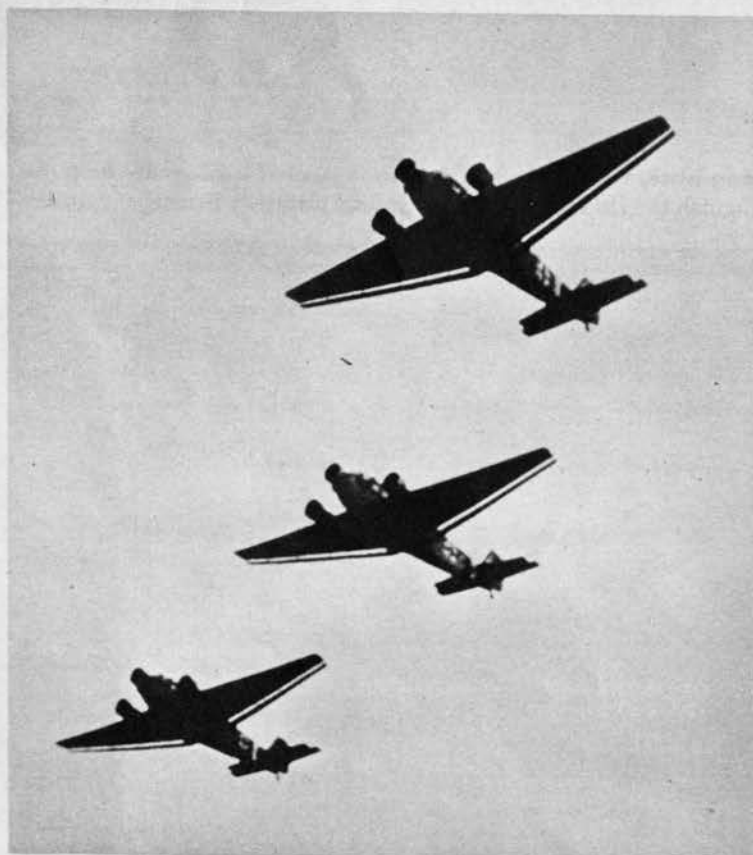
Three engines, twin-boom construction identify BV-138. Stabilizer is braced. The wing's dihedral begins outboard of the small nacelles.



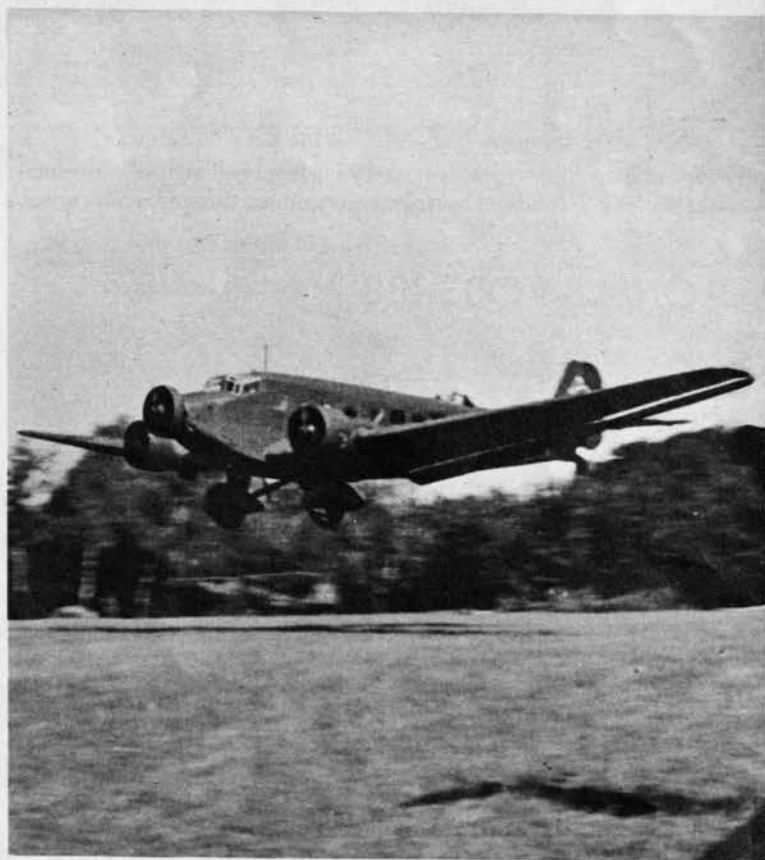


**Raked by Allied guns,** formation of Ju-52 transports skims over Sicilian Straits. B-25's (*top left*) and P-38's shot down 25 out of 35 in

this running battle in May 1943. First built in 1932, sturdy Ju-52 is still the Nazis' most important transport, troop carrier and glider tug.

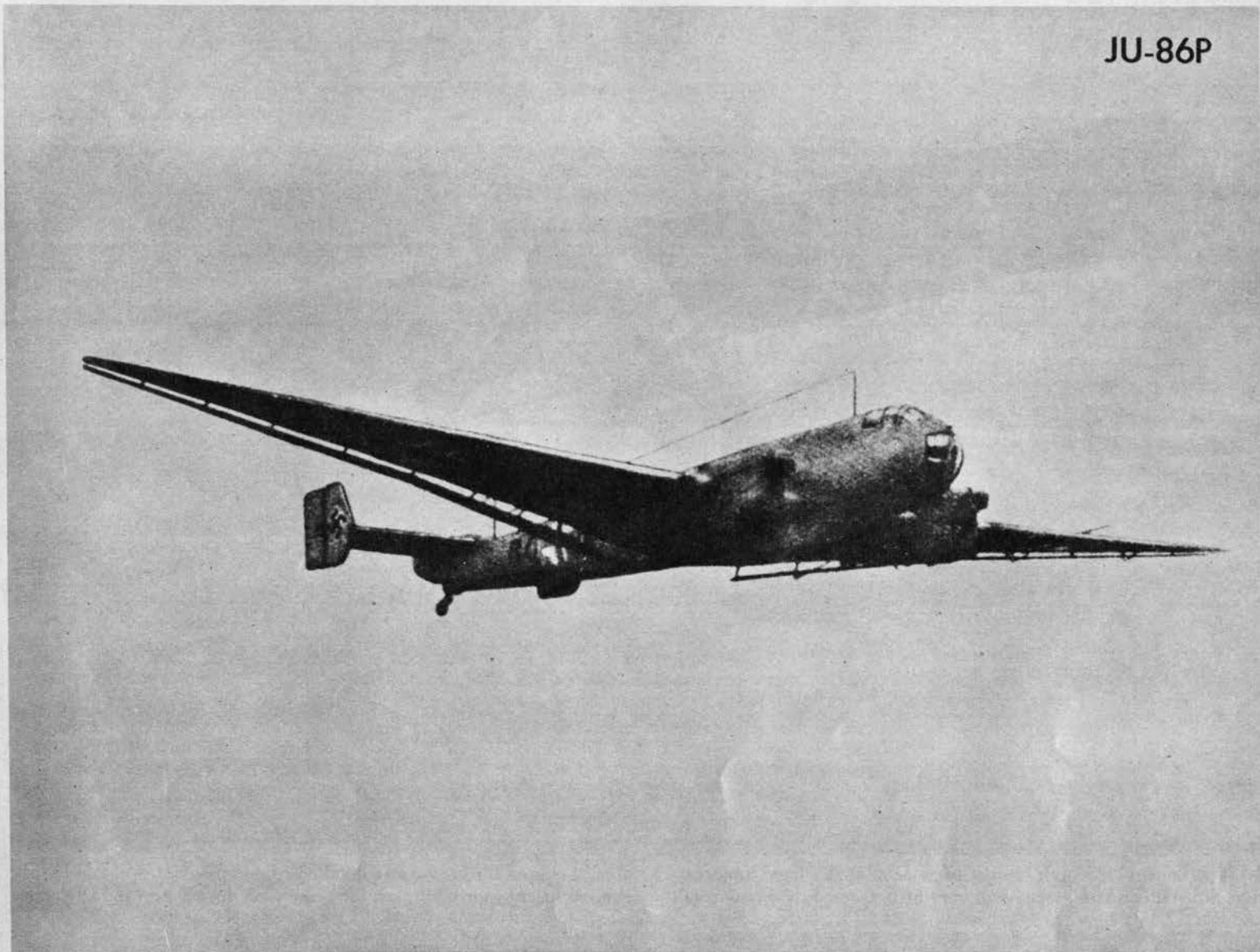


**Angular, boxy wing,** squared-off fuselage and tail assembly mark Ju-52. A further recognition point is the plane's fixed undercarriage.



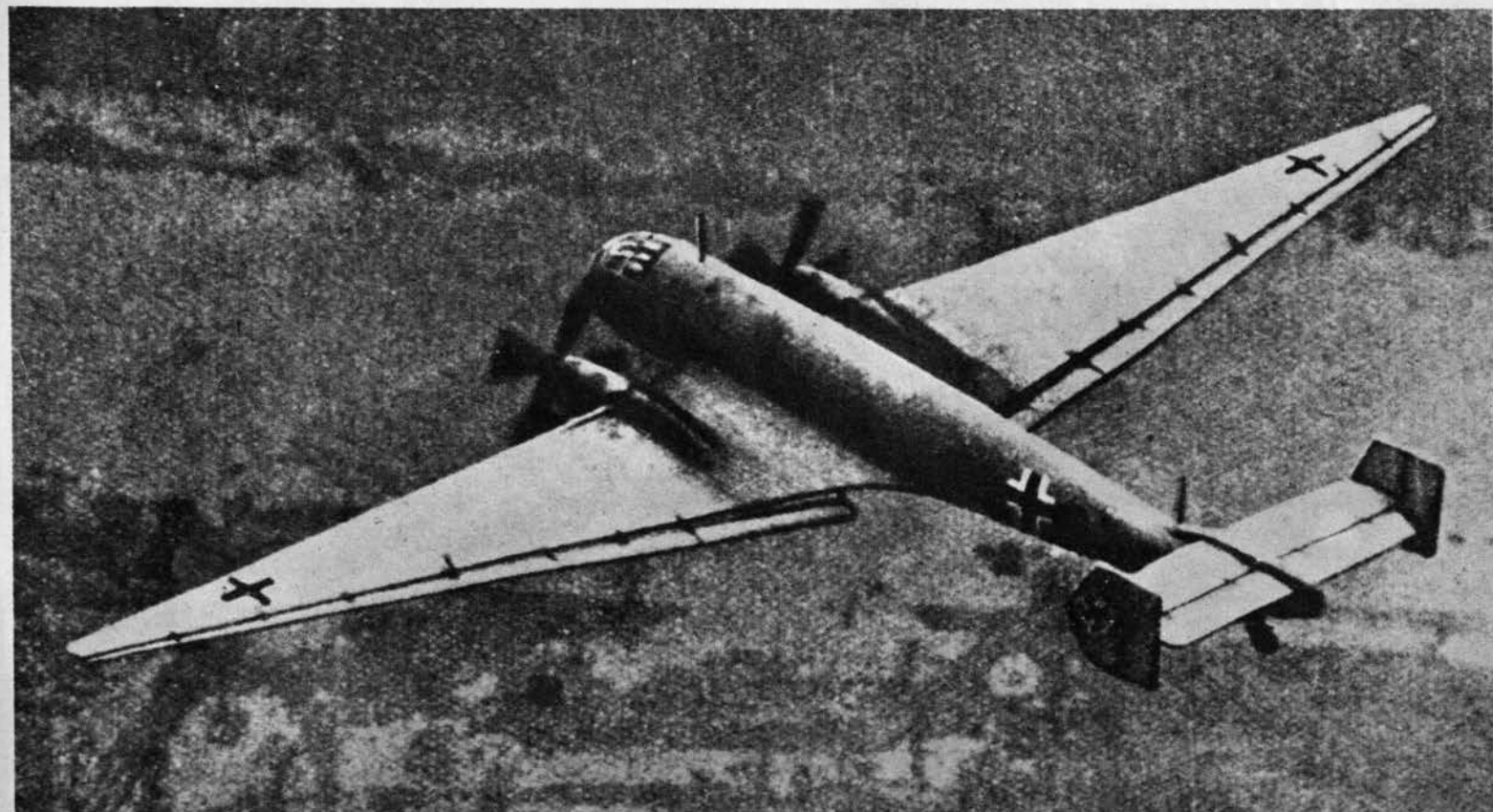
**Landing in Poland,** Ju-52 shows Junkers "double wing" with aileron from root to tip. Ju-52 is one of few tri-motored planes in operation.





**High-altitude reconnaissance** is main function of Ju-86P although up to a ton of bombs may be carried. The plane is powered by heavy-

oil Diesels, has pressure cabin for performance as high as 45,000 ft. It is a development of the Ju-86K, a standard German prewar bomber.



**Engine nacelles** set close to fuselage appear to be extremely small. Like Ju-52, the Ju-86P has "double-wing" construction. Usual span

is between 84 and 87 ft. and there is a new long-span version. Note the fixed tail wheel, wide rectangular tailplane set atop the fuselage.



## FIESELER-156



**Fi-156** is known as Storch (stork) because of stalky fixed undercarriage. Since it can land, take off in very little space, hover over small

area, it is used for liaison and detailed reconnaissance. General Montgomery used captured Storch for some time during Libyan campaign.

## HS-126



**An observation plane**, Henschel-126 may also carry light bomb load. It is obsolescent, but still operates on quiet sectors on Russian front.



**Parasol wing**, radial engine and fixed landing gear are outstanding features. The Hs-126 can make 230 m. p. h. and has a 27,000-ft. ceiling.





**Twin-boom observation plane, FW-189** has been adapted for ground attack, communications, supply and ambulance work. Its weak power

plant (450-h.p. inlines) prevents it from being first-line combat plane. Glassed-in gondola looks like a bumblebee between the twin booms.



# NEWS & MISCELLANY

## NEWS

A recent intelligence report from the China theater indicates that the Japanese are now using three-engine aircraft. Several of these were seen during a Japanese bombing attack. Two of the engines are said to be in the wings, the third in the long nose. The wing appears to have a very long span and upturned wingtips. The airplanes observed were painted either yellow or orange.

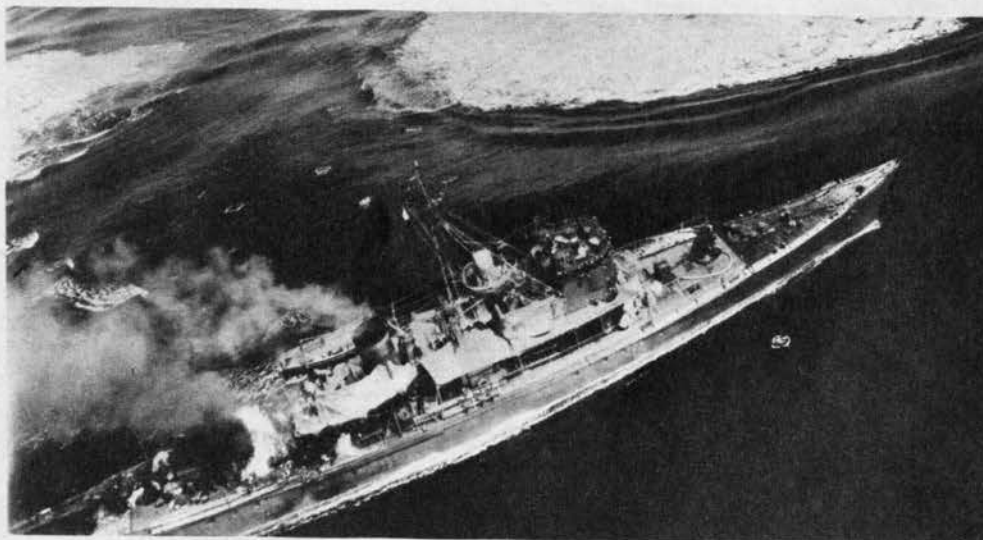
From aerial photographs taken over Paramushiro it is believed that the following changes have been made in the Kumatori class of Japanese light cruisers:

Antiaircraft: two mounts, probably 3-in., have been added abaft the No. 3 stack. Torpedo tubes: two twin mounts abaft the bridge have probably been removed, replaced by two quadruple mounts. Two twins have been added abreast of the catapult; two more, port and starboard, between No. 2 and 3 stacks on the boat deck. This would indicate that these ships now carry 16 tubes, the twins being 21-in. tubes, the quadruple mount probably 24-in. As originally designed the class carried 8 torpedo tubes.

The appearance of the bridge has also been modified and a range finder has been added abaft No. 3 stack.

Supplement No. 1 to ONI 201, Warships of the British Commonwealth, has just been issued. This clarifies nomenclature and sequence of classes of British destroyers, particularly the relation of the two alphabets.

A Japanese subchaser of undetermined class was photographed near New Hanover, New Ireland in March 1944. It would seem to be a development of the PC 13 Class built from 1937 to 1942, formerly referred to as PC Class 40-47. The new ship is estimated to be 200 ft. long, 24 ft. wide. It displaces about 300 tons. It carries one 3-in. 40-cal. dual-purpose mount forward of the bridge. The gun is the same as one used in Jap shore installations. Some may carry small AA atop the bridge. Depth-charge equipment consists of two racks and two



New Japanese sub chaser photographed off New Ireland is described in text below.

throwers located abaft the stack. Arbors with cradles for charges are stowed along the rail abreast the foremast. A degaussing strip can be seen below the rail. Estimated speed is 16-20 knots.

Though no armor has yet been found in wrecked or captured Zekes, a recent combat report states that a Zeke stood up well, neither burning nor exploding, under direct fire at less than 200 ft. This may indicate that Zekes are now carrying more protection.

Recently the Jap bomber Lily has been found with a dive brake fitted under the leading edge of each wing. This may indicate new uses for a standard Jap type.

Tony, type 3 fighter, may now be appearing with either two bombs, two fuel tanks or one bomb and one fuel tank under each wing for long range fighter-bomber use.

## CORRECTION

The glider pictured on the lower right-hand corner of page 32 in the *Journal* for April is the Hengist, not the Hamilcar.

Note the resemblance of the bow to lines of typical Japanese cruisers and destroyers.

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## QUIZ ANSWERS

### QUIZ No. 1:

1. U.S. CV Enterprise; U.S. BB North Carolina Class; U.S. DD Benson - Livermore Class
2. Brit. CA Improved Southampton Class
3. German BB Tirpitz
4. Jap. CL Kuma Class
5. Brit. DD "A" to "I" Class
6. U.S. CA Portland Class
7. U.S. CA Wichita Class
8. German BB Tirpitz
9. Brit. CV Illustrious Class
10. U.S. DD Fletcher Class

### QUIZ No. 2:

1. German 76-mm. Self-propelled Gun on PzKw 38 Chassis
2. German 75-mm. SP Gun on PzKw III Tank Chassis
3. German Armored Half-track Vehicle
4. German PzKw Mark V, Panther
5. U.S. Light Tank, M-5A1
6. U.S. Half-track Vehicle
7. U.S. 75-mm. Howitzer Motor Carriage, M-8

### QUIZ No. 3:

8. British Churchill Tank
9. German Half-track Car
10. U.S. T-70
11. Russian Medium Tank, T-34
12. U.S. 105-mm. Howitzer Motor Carriage, M-7
13. British Daimler Armored Car
14. British Cromwell Tank
15. U.S. 105-mm. Howitzer Motor Carriage, M-7
1. Ju-87
2. PBY
3. B-26
4. B-24
5. F6F
6. Me-109F
7. Typhoon
8. F4F
9. P-39
10. SBD
11. OS2U
12. TBF
13. Hurricane
14. FW-190
15. P-38
16. B-25
17. Mosquito
18. Ju-88
19. Halifax
20. A-20
21. Sally
22. Stirling
23. Zeke
24. Me-110

### QUIZ No. 4:

1. Sally
2. Me-109F
3. A-20
4. Mosquito
5. P-47
6. Zeke
7. Oscar
8. F4U
9. SB2C
10. Ju-88
11. Kate
12. P-51
13. DB3F
14. Me-210
15. Val

## CREDITS

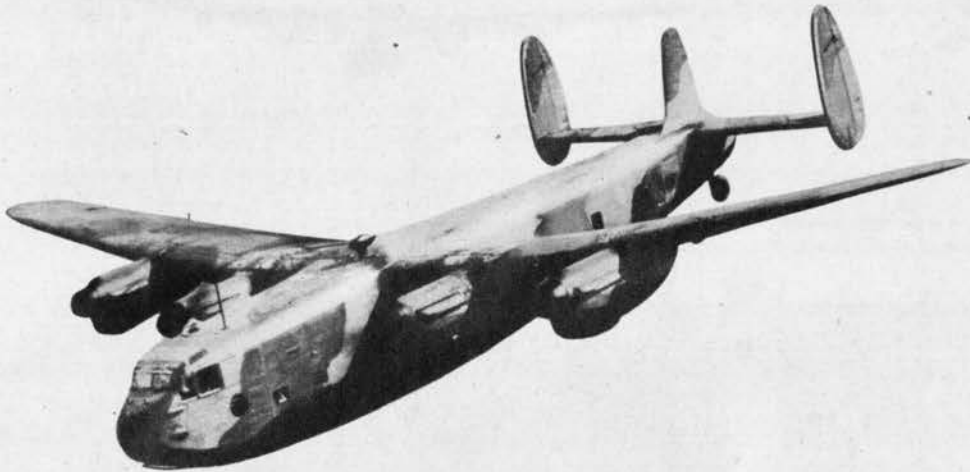
The pictures used in the *Journal*, unless otherwise specified (see below) came from the Allied Armed Services.  
 Cover—Sam Shere  
 3—Int.  
 6—Bot. left, E. A. Hamilton  
 12—Gen. right, North American Aviation Inc.  
 13—W. W.  
 24—Top, Walter B. Lane  
 25—Top, Frank Scherschel  
 28—Top, Elliot Elisofon  
 30—Top, J. R. Eyerman  
 31—Top, W. W.  
 34—Top, Wm. Vandivert  
 39—Top, London Daily Mirror  
 44—Bot. right, Paramount from A. P.  
 Abbreviations: A. P., Associated Press; Int., International; W. W., Wide World



TRANSPORT



U.K.



**DISTINGUISHING FEATURES:** Four-engine monoplane with a high wing tapering on outer panel into rounded tips. Dihedral on the outer panel is sharp. The slab-sided, box fuselage is typically British. Outer fins, which look like guitar picks, are identical with Lancaster's. A third fin has been added in the center to increase stability. Inline engines are underslung. Tailplane shows moderate taper on trailing edge.

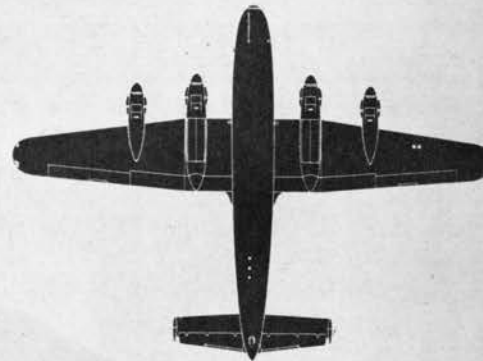
**INTEREST:** The Avro York is, next to the Ensign,

the largest land-based transport ever built in England. Developed from the Manchester medium and Lancaster heavy bombers, the York can carry four jeeps or a dismantled Spitfire. The high wing gives ample propeller clearance on the ground, and enables the fuselage to sit low for convenient loading through panel on the port side. Maximum passenger capacity over 1,000-mile range is 56; operational cruising speed is approximately 200 m.p.h., about average for transport.

MAY 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 20-30  
NAVY DEPARTMENT BUAE 3

# YORK



**SPAN:** 102 ft.  
**LENGTH:** 78 ft., 6 in.  
**APPROX. MAX. SPEED:** 285 m.p.h.  
**SERVICE CEILING:**

RESTRICTED

**NOTE:** This page is to be cut along dotted lines (above and below), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

FIGHTER



JAPAN



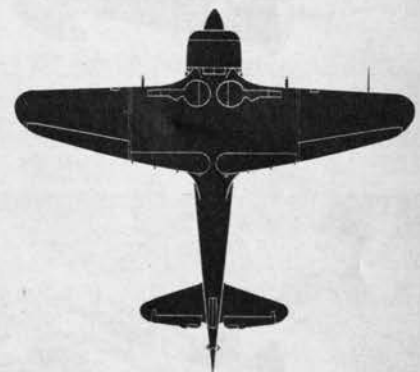
**DISTINGUISHING FEATURES:** Single-engine, low-wing monoplane. Tojo has an elliptical wing similar to that of the P-47. Heavy round nose tapers to an oval aftersection, giving plane a stubby, compact appearance. The fin has gradual forward slope. Tailplane, set well forward of the fin and rudder, provides an excellent recognition feature. Cockpit differentiates models; Mark I is flat topped, Mark II streamlined. Also typically Japanese is the circular engine cowling.

**INTEREST:** Smallest, yet most powerful Jap single-seat fighter, Tojo shows a Seversky influence in wing and fuselage. It is fast and maneuverable and has the highest rate of climb of any Jap fighter. Lightly constructed, both its armor and armament are inadequate by U. S. standards. Mark I (shown in rendering) has a 1,250-hp. radial engine; the better known Mark II (silhouette), one of 1,450-hp. Tojo's maximum armament so far has been four fixed guns firing forward.

MAY 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 20-30  
NAVY DEPARTMENT BUAE 3

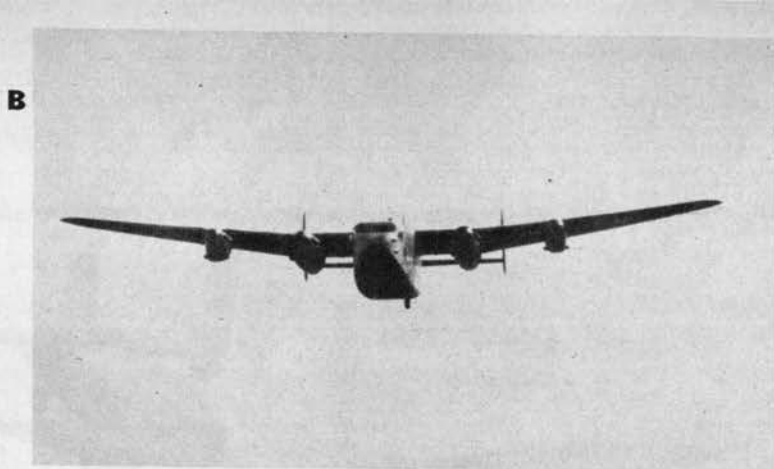
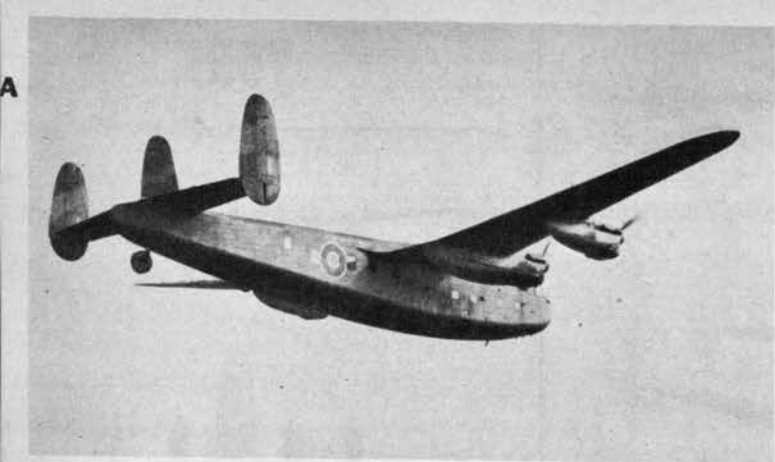
# TOJO



**SPAN:** 31 ft.  
**LENGTH:** 29 ft., 2 1/2 in.  
**APPROX. MAX. SPEED:** 380 m.p.h.  
**SERVICE CEILING:** 39,000 ft.

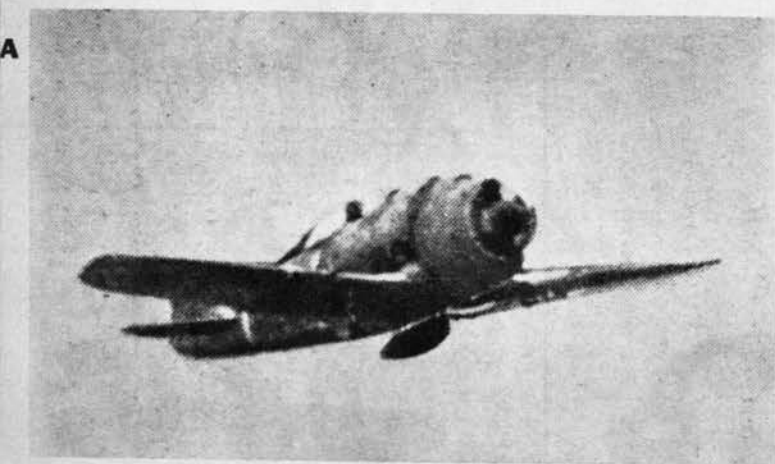
RESTRICTED





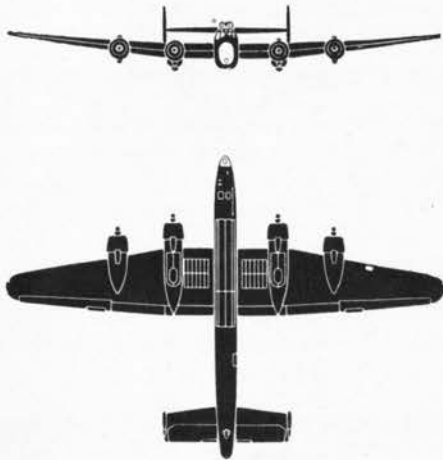
**THE YORK**, Britain's newest transport plane, is basically a Lancaster with a raised wing, an added fin and a new fuselage. It operates most efficiently at distances between 1,000 and 2,000 miles, may be used in postwar transoceanic service over Northern route.

**TOJO** is Japan's newest, fastest-climbing fighter. It carries the biggest, most powerful engine of any Japanese fighter. Although armor has sometimes been found on Tojo, it is still highly vulnerable to .50-cal. fire. Both plane and engine are manufactured by Nakajima.



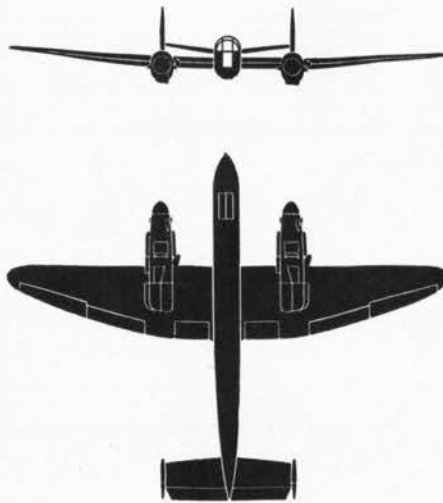


# NEW AND REVISED AIRPLANE SILHOUETTES



**HALIFAX III**

SPAN 104 FT.      LENGTH 71 FT. 7 IN.  
BIG BRITISH BOMBER HAS NEW WING TIPS



**HE-219**

SPAN 62 FT.      LENGTH 50 FT.  
NEW NAZI NIGHTFIGHTER (PROVISIONAL)



**DINAH MK. 1**

SPAN 48 FT. 2 IN.      LENGTH 36 FT. 1 IN.  
REVISED OUTLINES OF JAP RECCO TYPE

Radically different from any other airplane in the European theater, the new Heinkel twin-engine fighter should be easily recognized by its long thin fuselage, bulbous cockpit and twin tail. The Hali-

fax III is now being manufactured with round wingtips but otherwise remains unchanged. The silhouette of Dinah shown at the right is the result of fuller intelligence now flowing in from the Pacific.



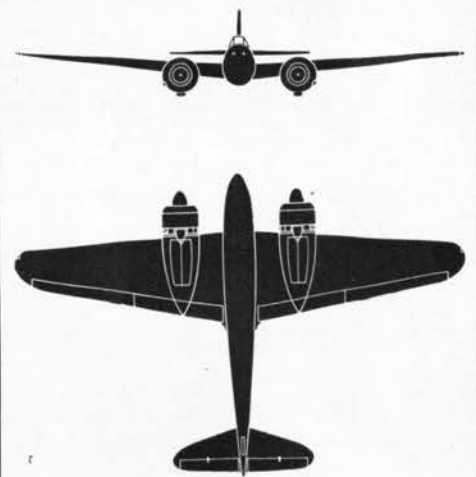
**JUDY**

SPAN 37 FT. 9 IN.      LENGTH 33 FT. 7 IN.  
THIS UPDATES MAY RECOGNITION JOURNAL



**TONY**

SPAN 39 FT. 3 IN.      LENGTH 30 FT.  
NEW REPORTS SHOW SHORTER AIRSCOOP



**NICK**

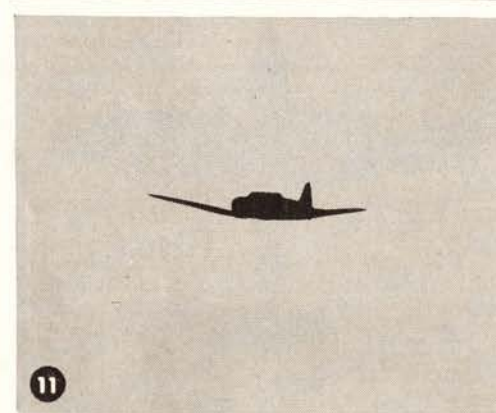
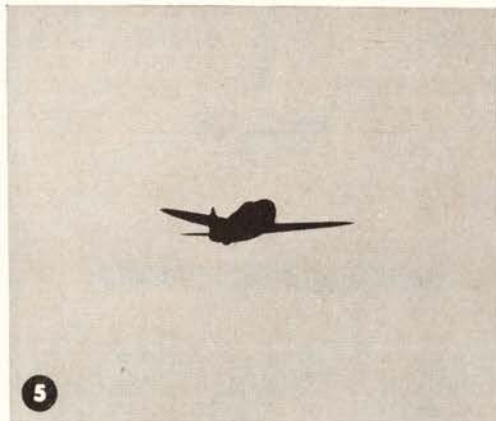
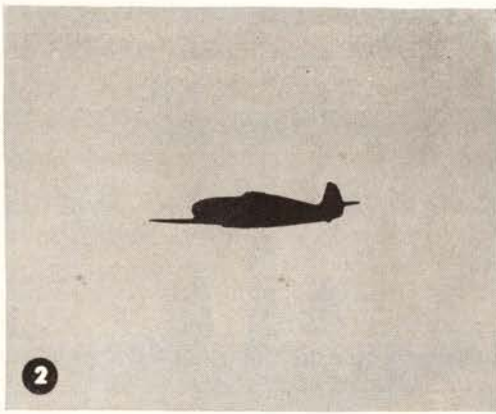
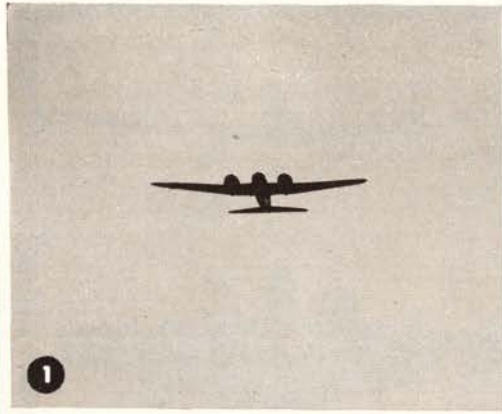
SPAN 49 FT. 6 IN.      LENGTH 34 FT. 6 IN.  
JAP TWIN-ENGINE FIGHTER (PROVISIONAL)

Photographic reconnaissance and the wrecked planes found at captured Japanese bases are supplying U.S. Army and Navy intelligence officers with much more detailed knowledge of the equipment our

enemy is throwing against us. The silhouettes on this page of Dinah, Judy, Tony and Nick have all been revised as a result of this information. They should, however, still be considered provisional.



# QUIZ NO. 4: TYPES FROM ALL FRONTS





# RECOGNITION

JOURNAL



TORPEDOES HIT  
JAP FREIGHTER

~~SECRETED~~  
JULY, 1944  
NUMBER 11

WAR DEPT.  
NAVY DEPT.





# QUIZ NO. 1: WARPLANES IN COMBAT





# RECOGNITION JOURNAL

JULY, 1944

NUMBER 11

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SWIRLING WAKES OF U. S. CRUISERS AND DESTROYERS MARK CONFUSED BATTLE PATTERN OF OCT. 5, 1943 REVENGE RAID ON WAKE ISLAND

## COMBAT RECOGNITION

There is an old axiom of war which says that no man is a soldier until he has been blooded in battle. All the long months of close-order drill, manual of arms, even living under simulated combat conditions on maneuvers, only give a man a background for fighting. Somewhere, some place he will meet the enemy and, with only himself to depend on, he will either pass his final examination as a soldier or he will flunk forever.

A simple analogy may be set up for recognition. Although relatively new as an adjunct of war, recognition has, in the last few years, advanced to a point of sufficient importance so that rarely does a soldier nowadays get overseas without some training in it. And since it is new, not all the kinks have yet been worked out; there is no one theory to study. Rather, recognition should be regarded as a vital growing field (*see p. 10*) and as such every possible approach to it should be taught. Devices like the flashmeter, the shadowgraph and models have been used to teach what warships, tanks and airplanes look like. Together with lec-

tures these form the vital background for good recognition. But, as in the case of the soldier, the final test comes only in combat.

In combat, recognition ceases to be a thing in itself, a be-all, end-all. It is simply a technique to be integrated with all the other units of war. To use it properly a pilot or a gunner must have good sense; he must realize that first of all he should pay strict attention to briefing (and good briefing should also emphasize the recognition problems, friendly and enemy, in the area of operations). He must be aware of identification as well as recognition and perhaps most important he should understand fully the problems of each operation. All these, along with his mechanical weapons, are part of the scheme of combat.

On the following four pages scenes from fields of action on the wideflung battlefronts of the world show the problems of recognition as they appear to the fighting man. These, with comments drawn from combat reports, will, we hope, help to prepare the new soldier for the final recognition test he must not fail.



# RECOGNITION IS TOUGH IN THE AIR

"I didn't fire until I got so close I could see the German crosses on the wings and fuselage of the aircraft because I had already bounced so many P-51's that I wanted to make damned sure." While it is seldom advisable to depend on insignia for recognition, this candid quote from an Eighth Army Air Force fighter pilot is typical of the attitude of the experienced combat flier. Recognition is no dull story to them. They know it is one of the toughest and most important activities of their job.



**Two FW-190's** dive through a high-flying Fortress formation (*upper left*). The central plane is stopped by the camera and clearly recognizable, but the FW-190 at lower right is just a blur. This is how it

might look to an untrained eye. As the enemy fighters dive and roll, the B-17's keep tight formation so that their guns form as concentrated a field of fire as possible. Thus each plane protects every other plane.



**Nazi fighter rolls** on its back after attacking the high element of a Fortress combat box in a raid on Stuttgart. The usual German fighter tactic is to dive in, roll over and pull out. The vital part of the attack

is the dive. At that time, head-on recognition must be certain. As the attacker rolls away, he shows himself to better advantage and can be recognized much more easily, but by then it may be too late.



When seen from the greatest ranges all single-engine fighters look alike. As they close in, it is still difficult to distinguish between rival inline fighters or either side's radial jobs. Only the sharpest observation and fullest knowledge can make recognition sure. In the heat of battle, the 400-m.p.h. passage of a fighter through the skies may even make it almost invisible. Returning pilots have reported that on their first few sorties, though they had been in action, they had not seen a recognizable airplane. It

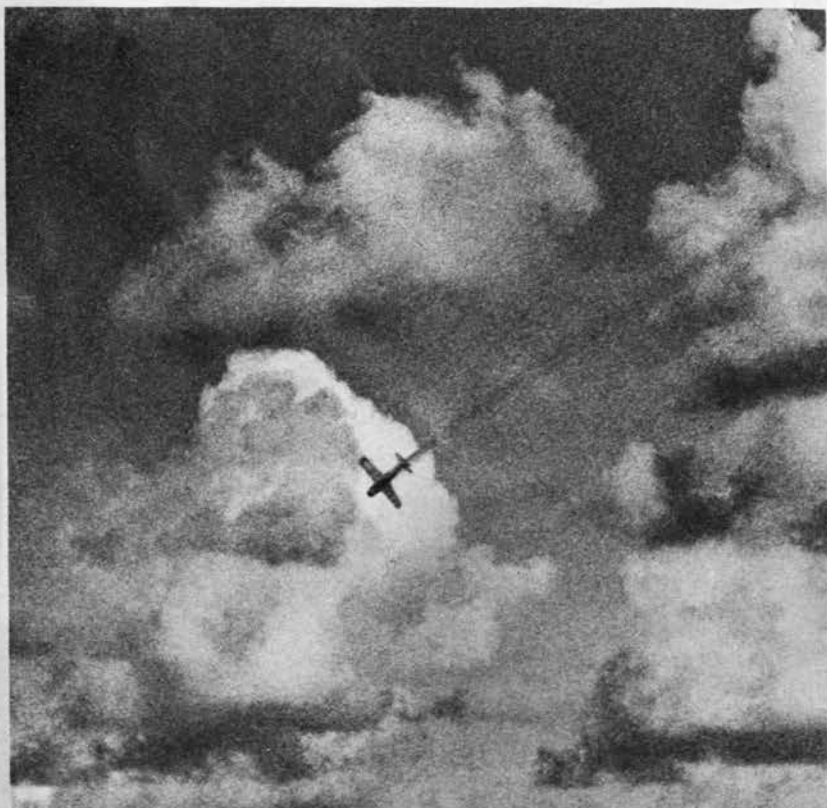
has taken several sorties to train their eyes to instant recognition.

This quick observation, then, is the final unit in the flier's recognition course. By supplementing it with constant brushing up on the ground, the good pilot or gunner will save those precious few seconds which distinguish between life and death. He will be able to find his target and hold it until it is within firing range and not waste valuable time in abortive runs on bombers of his own team. His shots will only count against the enemy.



**An airplane's appearance** changes in flight. The auxiliary fuel tanks carried by these Navy F6F's make them look very much like RAF Hurricanes. The two-plane elements seen flying in close wing position,

however, look like some strange twin-tail, twin-engine aircraft. Air-to-air recognition must take note of all such appearance changes, whether they result from auxiliaries or from direction of approach.



**Jap fighter Tony** dives toward the earth trailing his funeral plumes. Tony and Tojo are a constant headache to South Pacific fliers because of their very close resemblances to USAAF inline fighters and P-47's respectively.



**Jap torpedo bomber**, probably Jill, jinks off after dropping his fish. Horizon-level approaches and evasive action make concentration by both gunners and spotters a combat necessity.



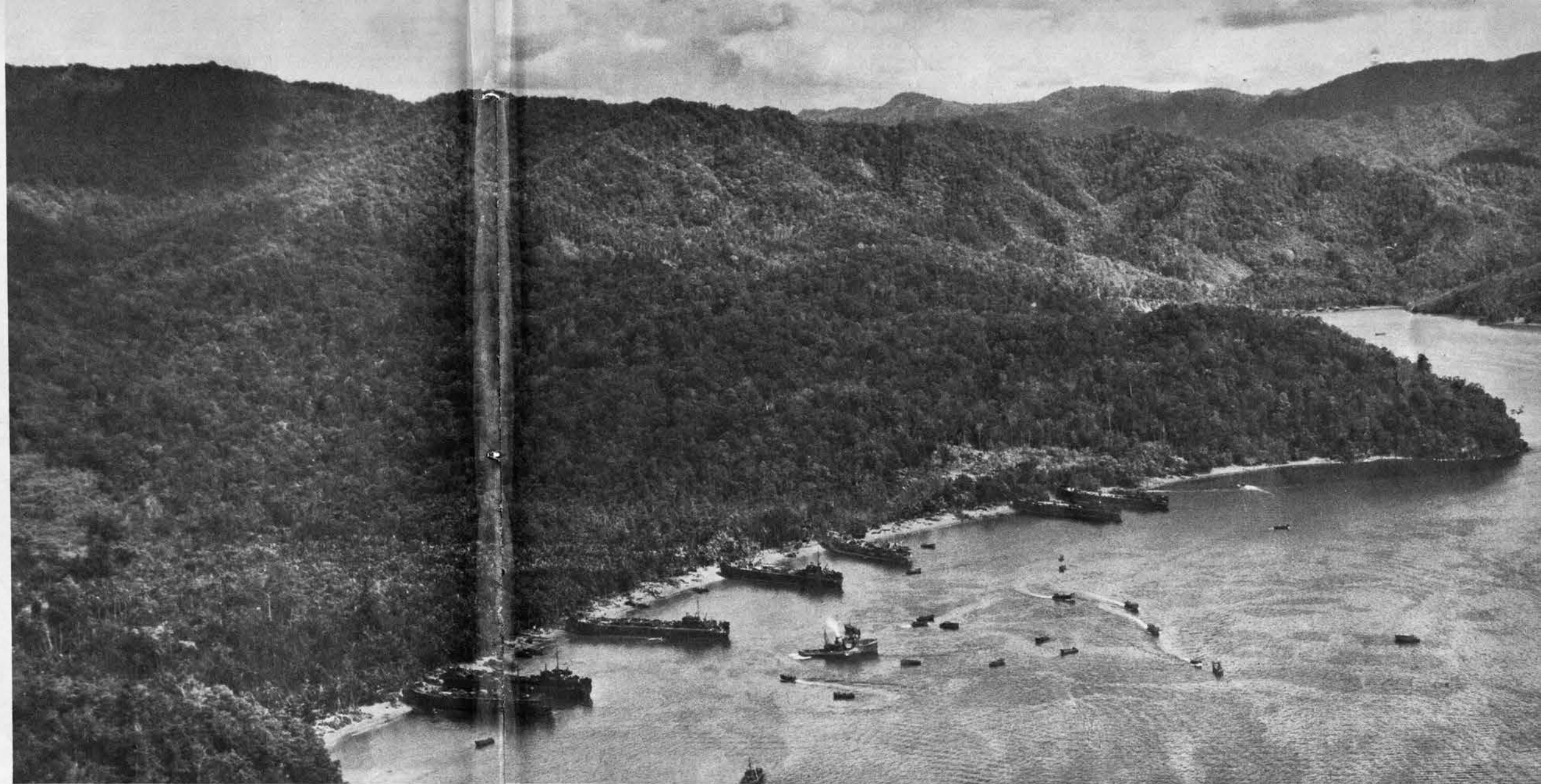
# BATTLE SPOTTING IS COMPLICATED

When the fleet or the ground forces go into action, recognition is theoretically easy. We know where the enemy is and recognize him by his position. But whenever the battle becomes fluid—as in the deserts of Africa or in new landing operations—complications arise. Position is no longer a key to recognition.

As an example: On Aug. 17, 1942 two Japanese destroyers steamed in to shell Guadalcanal and Tulagi. At that time we were still moving in men. A flotilla of Higgins boats had gone up from Matanikan to Kukum. A B-17, sent out as Army air support, dove on one of the Japs, hitting it amidships, then swung away down the channel. As it flew over the Higgins boats, it was fired on, at which point the shore defenses opened up on the Higgins boats in the belief that they were Jap barges.

Luckily, in this instance our self-inflicted damage was low. But in any invasion, from the smallest island strike to the mass surge into a continent, confusion is unavoidable. In the excitement of battle, individual men will cross the carefully plotted patterns. When this happens, instinctive recognition is the only safeguard.

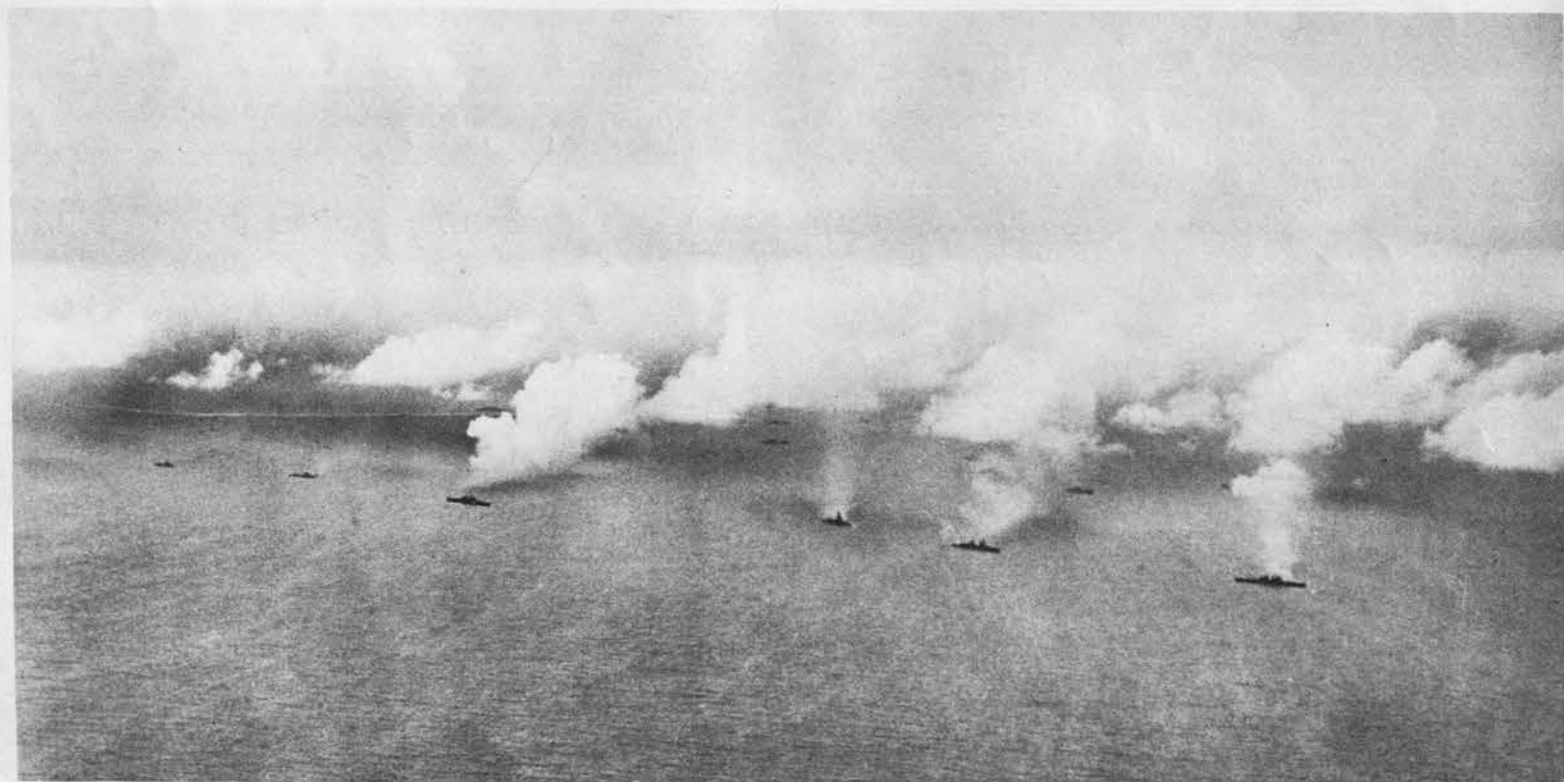
But recognition can not be a save-all. It is an essential part, but only a part, of a greater battle plan. In any task-force operation, the thorough briefing of combat crews should include the types of enemy as well as friendly matériel. Navigation must be perfect so that crews will always know where they are and can distinguish between task forces by their positions. When returning to base they must know the assigned approaches of the day; when damaged and in critical shape, they must be sure of their identification signals in case they have to cross the stated approach lines. Only when the full technique of attack has been observed can recognition save the crew from that unpredictable eventuality.



MacArthur's forces land at Tanahmera Bay at Hollandia. Big American LST's have nudged their way up to the beach while numerous smaller craft circle offshore. If the Japs had succeeded in bringing

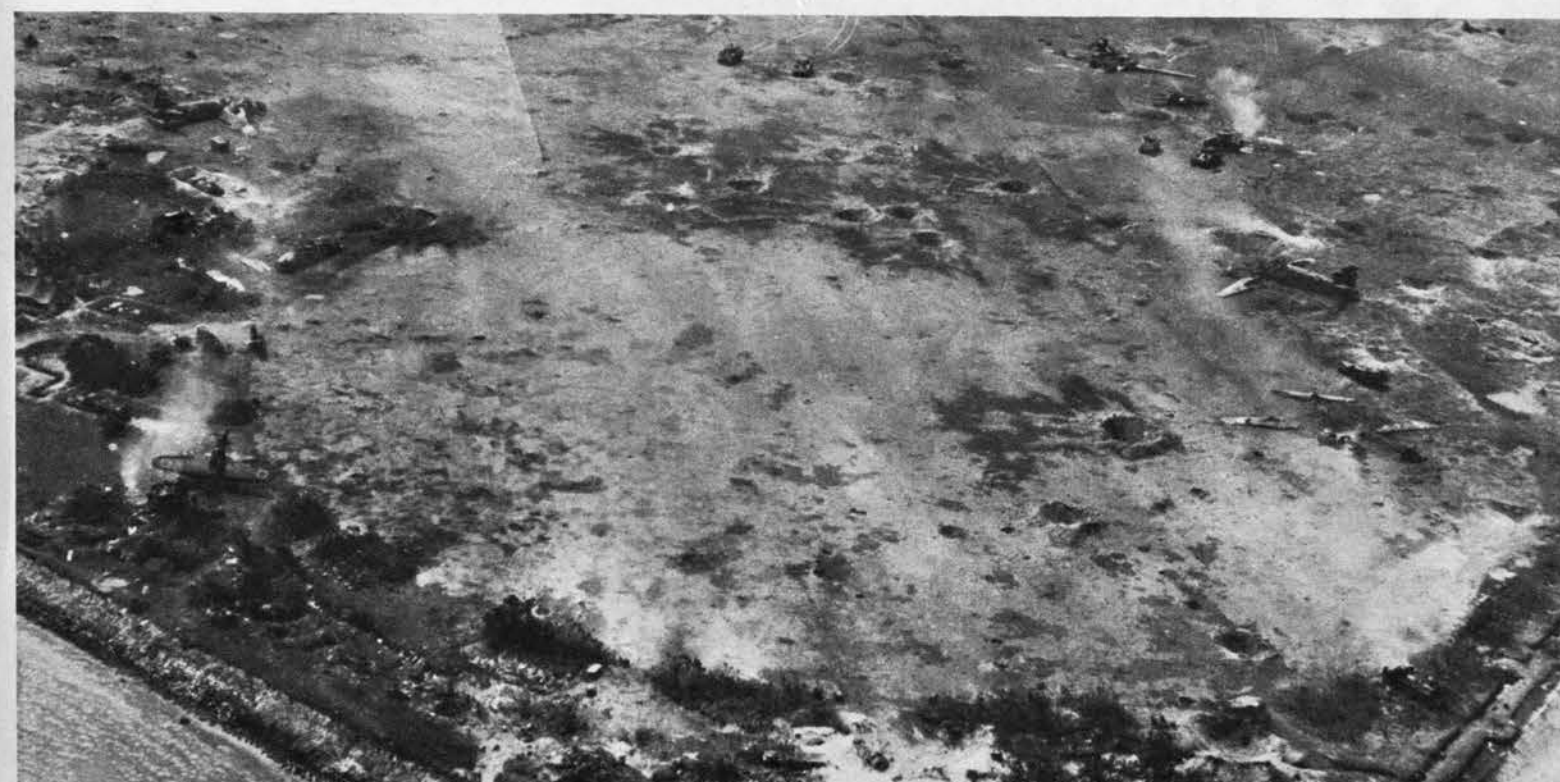
up reinforcement, this scene would not have been so quiet. It is not inconceivable that simultaneous support landings would have been going on at other points on the coast. From the air, the supply barges

now being used by the Japanese do not appear radically different from our own craft. Fliers softening the beachhead and covering the landings might well be confused, waste precious combat time and gasoline.



Big ships lie offshore and shell Roi and Namur on D-day at Kwajalein. Proper briefing, in a case like this, would make certain that U. S. carrier pilots were fully aware of the disposition of all our own ships

in the attack. In actions such as this one, unless notified that certain individual ships may be detached to specified areas, any ship in a known enemy sector is fair game for the pilots from American carriers.



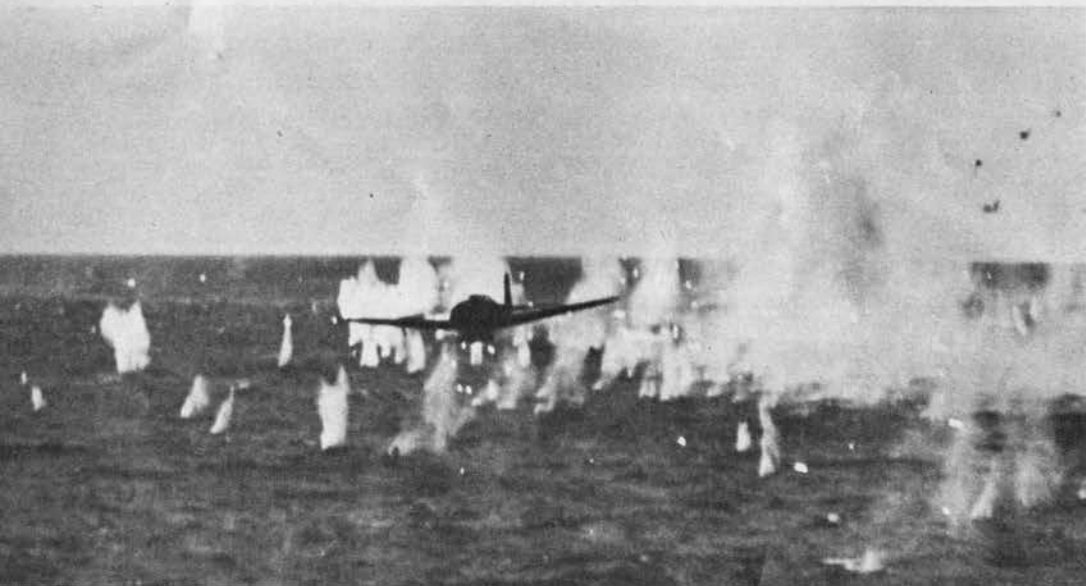
Last stage of the battle for Roi-Namur finds the Japs entrenched with their backs to the waterfront, American medium and light tanks moving down to push them into the sea. Ground is littered with wrecked Jap-

anese planes including Bettys, Zekes and Jills. In such close vigorous action, Allied and enemy equipment will be mingled. Without quick recognition, the M-4's and M-5A1 would have been shot up as Japs.





DARING JAP PILOT SWOOPS LOW IN BEGINNING HIS RUN AS AA SHELLS BURST ABOUT HIM



ALMOST ON DECK, JILL SHOWS FULL DIHEDRAL WHICH DISTINGUISHES IT FROM SISTER KATE



UNSCATHED BY AA AND SPLASH BARRAGE, JILL COMES UP TO CAMERA, DOES NOT DROP FISH



# THREE JILLS IN TROUBLE

These three exciting photo-sequences tell the story of one important phase of the current naval air war in the Pacific. Jill, the Jap's fine new torpedo bomber, is operating on an ever-increasing scale and as our strikes become more daring, it is harrying our carrier task forces with great determination. We have had no major losses but Jill's attacks are much more than a nuisance. They constitute a real threat.

Though combat reports have indicated that Japanese pilots are not pressing torpedo attacks with quite the suicidal bravery that distinguished their early operations, Jill's first appearance (see *May Journal*) and these new action pictures would seem to discount verbal reports. Besides being fine recognition photographs, the sequence at left is a tribute to at least one Jap pilot's pertinacity and courage.

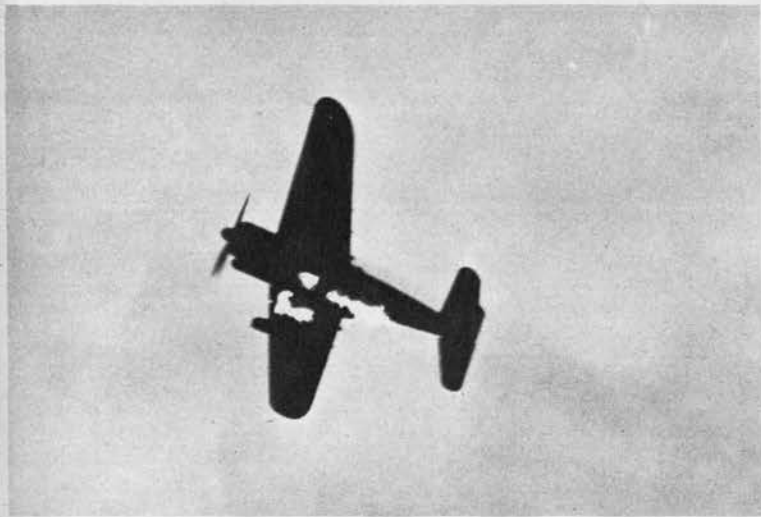
The two strips of pictures on the right-hand page have at least one thing in common. In both, the landing gear has descended when the plane was hit. This suggests that the hydraulic system of this particular type may be especially vulnerable. Otherwise, Jill does not seem to disintegrate when hit quite so easily as most Japanese aircraft.

Combat-wise, Jill offers very little recognition trouble. It closely resembles its older sister Kate so that—once you have allowed for Jill's higher performance—it is only a matter of shooting down any and all Jap torpedo bombers. However, for intelligence purposes it is essential to distinguish between them. Unless we know what planes are operating in a particular theater, we will not know what to send up against them.

The chief points of difference in appearance are: Jill's more prominent nose cowling, taller fin and rudder, and longer, narrower tailplane. Jill also has 4 ft. less span (48 ft. 6 in.) and 1 ft. more length (35 ft.). The wings are roughly the same shape, but on Jill's wing the dihedral starts from the root; Kate's wing has a straight inboard section. This last point is particularly valuable in head-on recognition.

The improvement in performance for Jill is largely the result of its larger, more powerful engine. However, the decrease in wingspan and the consequent heavier wing loading should mean a decrease in maneuverability and a considerable increase in speed. The change to a full dihedral wing and increased tail surface was probably brought about to increase the stability and ease-of-control of the new, faster, heavier aircraft.





HIT BY SHELLFIRE, JILL CLIMBS TOWARD SAFETY AS FLAMES BREAK OUT



AS FLAMES GAIN, JAP'S CLIMB FALLS OFF. LANDING GEAR HAS FAILED



OUT OF CONTROL AND TRAILING SMOKE, JILL DIVES RAPIDLY TOWARD SEA



SMOKE MARKS JILL'S END AS ITS QUARRY PASSES UNHARMED IN THE REAR



HIT BEFORE BEGINNING RUN, THIRD JILL BEGINS PLUNGE TO DEATH

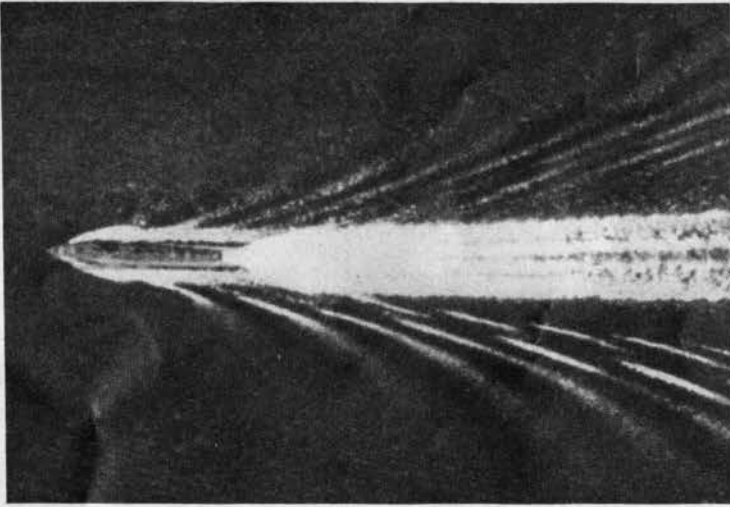


AS IN SECOND SEQUENCE, LANDING GEAR IS SHOT OUT, CONTROL LOST

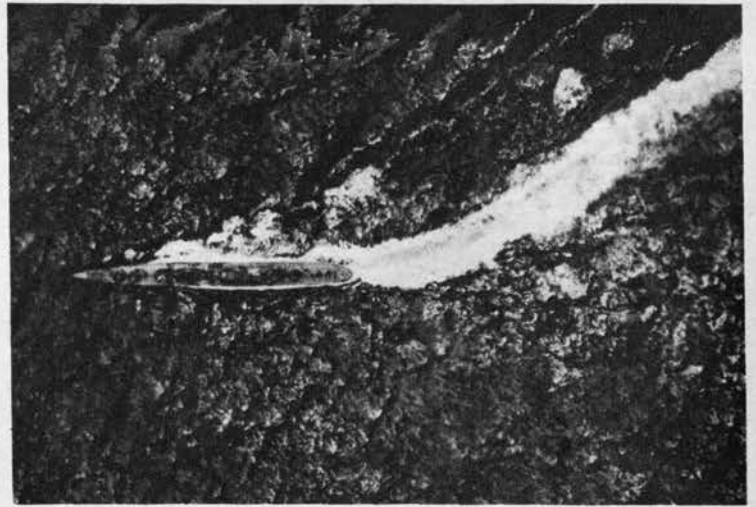


SPLASH MARKS ANOTHER HIT FOR U. S. GUNNERS, ANOTHER DEAD JAP





In a smooth sea, destroyer proceeding in a straight line will leave the characteristic wake pattern shown at the left above. But in rough



water (right), no indication remains but the long white turbulence left by the swerving warship as the destroyer takes evasive action.

# WAKES DON'T HELP SHIP RECOGNITION

Recognition is still growing up. In the October issue of the *Journal* we published a story on identification of ship types by their wake patterns. At that time, this seemed valuable. However, fuller study has shown this method to be unreliable. Though ships proceeding in a straight line in a smooth sea under full way do leave distinctive trails, changes in speed or direction, surface disturbances or rough seas will so alter or obliterate wakes as to make them almost useless for recognition purposes. It is still necessary to know the appearances of the ships themselves.



Identical wakes are produced by a carrier and cargo ship as they steam along at about the same speed. From greater altitude, these

trails would only reveal that the ships were under way. Long wakes of fast small boats will help fliers locate them, not identify them.





**New PBN Catalina** is the latest in a long string of successful Navy patrol bombers. It will soon be in service on many fronts, supplement-

ing its older sisters in the many duties which made the Catalina the aerial work horse of the fleet. Note the new, longer hull steps.

## CATALINA FAMILY HAS NEW MEMBER

One of the most reliable patrol planes used by the Allies in this war has been the Consolidated Catalina. It is a favorite type with the U.S. Navy and Marine Corps, the RAF Coastal Command and the air arm of the Soviet Navy. Used for patrol and reconnaissance, cargo carrying and rescue work, it has performed most of the duties attendant to a fighting air fleet. To its credit lies much of the diminution of the U-boat sinkings in Allied coastal waters. It is truly one of the great airplanes of the war.

Now a revised model of the Cat is being manufactured at the U. S. Naval Aircraft Factory. This version is known as PBN-1. Though it is easily recognized as the Catalina, PBN-1 does differ in a few appearance details. The nose is somewhat longer and sharper, making the plane appear to be somewhat faster. The fin and rudder is both taller and more rectangular. The hydroplane steps on the hull have been altered to give a longer rear step and a V step on the forward section. The characteristic folding wing floats have been enlarged to give them greater buoyancy.



**New wing floats** form larger knobs at tips of the PBN's 100-ft. wing. New tail surfaces rise higher when seen from after quarter.



**Longer nose** makes the bulky craft look somewhat racier. Longer hull steps tend to reduce the upswept effect of the tail section.



# ALLIES HAVE TWO NEW TRANSPORTS



**Conestoga** has polliwog-shaped fuselage, unique sit in the air. Belly line forms V, with a bulbous head and high tail rising at either end.



**Cargo is loaded** through a ramp hatch under upswept tail. The Conestoga carries more than five tons in jeeps, ambulances or fighting men.



**RB-1's wing** is bar-straight but the tailplane has a very pronounced dihedral. The fuselage consists essentially of a long and squarish cargo

hold to which a bulblike nose and greenhouse and a raised tail have been added. The tricycle landing wheels can be only partially retracted.

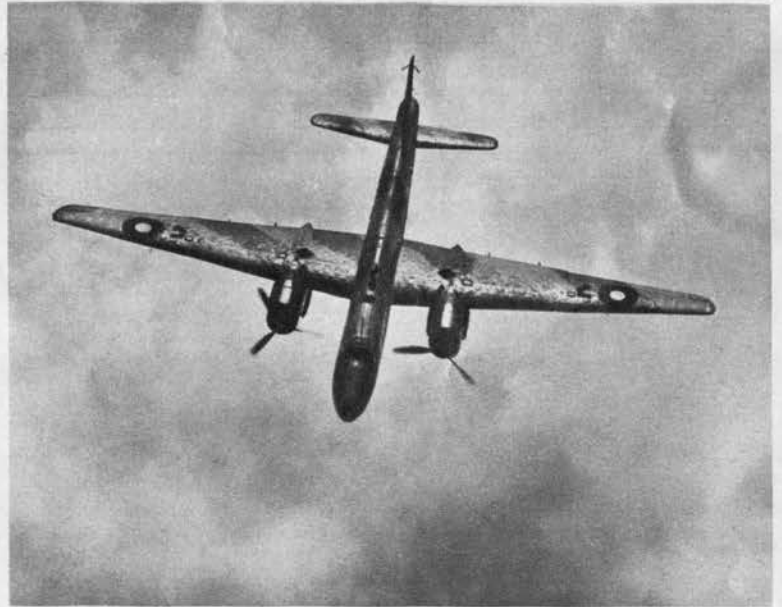


Now carrying war freight for the Allied nations are two completely new airplanes. One, the U. S. Navy's RB-1, the Conestoga, is a stainless steel monoplane, 68 ft. long and spanning 100 ft. It cruises at 165 m.p.h. and has a 1,700-mile range when carrying its maximum 10,400-lb. load. The RB-1's appearance will almost surely provoke some colorful nicknames. Its odd fuselage is actually a rectangular box 25 ft. long and 8 ft. square to which a round pilot's compartment and upswept tail have been added.

Contrasting with the odd and angular Conestoga is the very sleek Warwick, recently revealed as in operation with the RAF. Built by Vickers-Armstrongs, the Warwick shows a family resemblance to the Wellington. Like it, it uses the crosswoven geodetic construction, tall fin set atop an oval tail cone. The Warwick has 97-ft. span and 70½-ft. length. Its two engines are Pratt & Whitney R-2800 radials delivering either 1,850 or 2,000 hp. Its all-up weight is 45,000 lb., maximum speed is 244 m.p.h. and cruising speed 208 m.p.h.



**Clean lines** characterize the new Warwick. Its long oval fuselage is unbroken, tapers gracefully to a smooth rounded nose and tail section.



**Warwick's wing** is long and narrow with the more pronounced taper on the trailing edge. The tailplane is similar but tapers on leading edge.

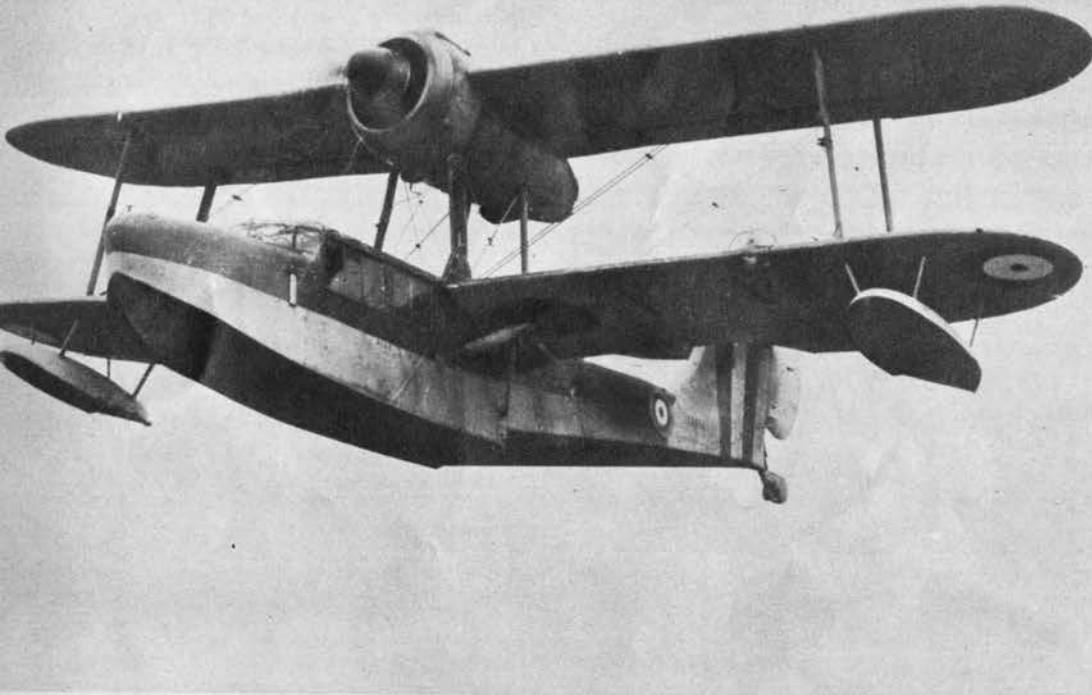


**Anglo-American co-operation** made the Warwick possible. Its two engines are U. S.-built, the airframe English. Geodetic structure of

fuselage is apparent in cabin windows. Midwing is typical of British bombers rather than British transports which tend toward high wings.

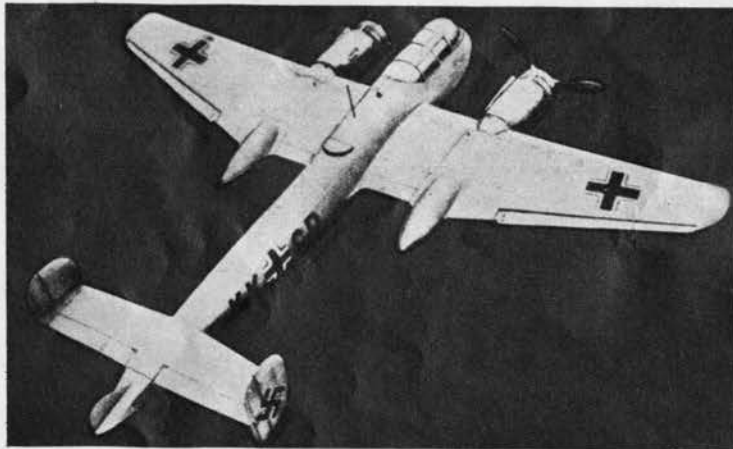


# SEA OTTER & ARADO 240



Replacing the sturdy old Walrus as a reconnaissance and sea-rescue plane for Britain's Fleet Air Arm is the Sea Otter (left). A development of the Walrus, the Sea Otter retains the former's archaic biplane structure and general hull outline. The extreme sweepback of the wings has been greatly reduced. The engine, no longer a pusher, is now set in the upper span rather than slung between the wings. A newcomer over England, the German's Arado 240 is a fast high-altitude reconnaissance plane, believed to have a pressure cabin and remotely controlled guns. It shows a superficial resemblance to Me-110 but differs considerably in its details.

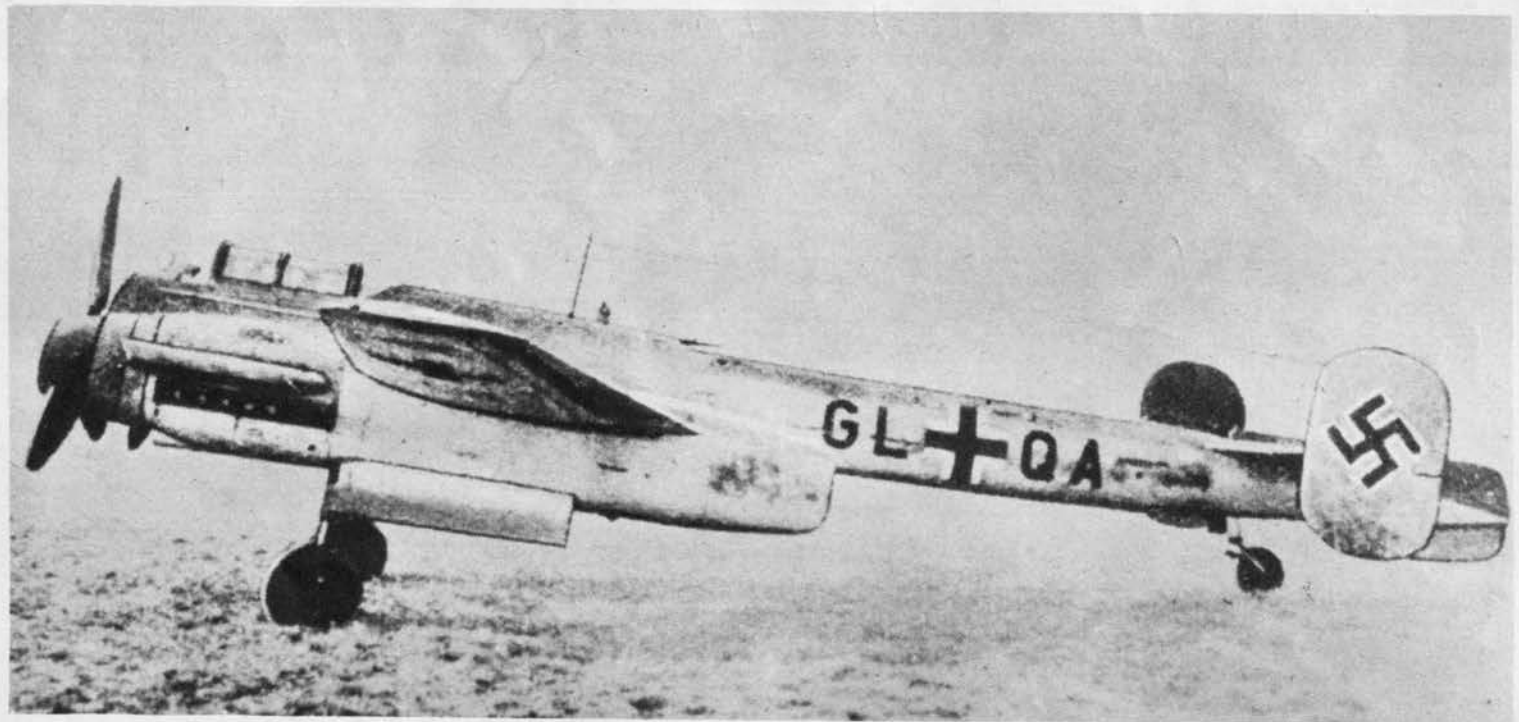
SEA OTTER'S LOWER WING IS SET ATOP GRACEFUL HULL. ENGINE IS MOUNTED IN TOP WING



Ar-240's fuselage cut by extra fin protrudes far behind elevator. Note wing's straight leading edge, blunt tips, broken trailing edge.



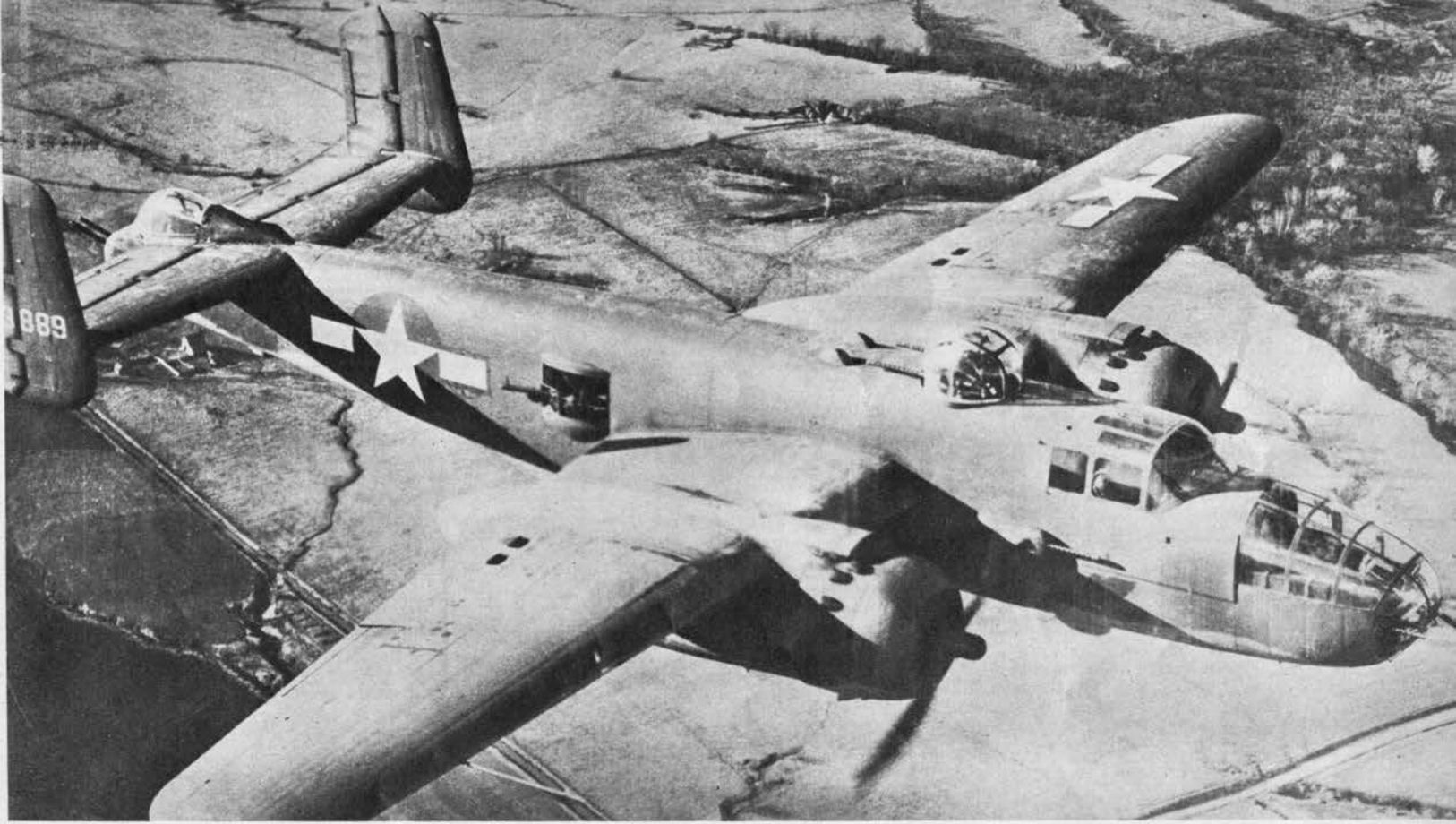
Low midwing with underslung nacelles marks Ar-240 when seen head-on. Cockpit set forward makes plane's nose look tall and thin.



Huge nacelles house inline engines, believed to be DB-603's or 605's. They also serve as mounts for fixed rear-firing 13-mm. machine guns.

The twin fins and rudders, curved at top and bottom, have straight sides. The tailplane is set above the slender fuselage.





B-25J HAS 13 GUNS, EQUALING MANY B-17s IN ARMAMENT. GLASS-ED-IN NOSE WITH ONE FIXED, TWO FREE GUNS SHOWS IT IS BOMBER TYPE

# MITCHELL AND MARAUDER

## Veteran U.S. medium bombers change outline with new guns

Most recent B-25 to go into operation is the J model (*above*) which has 13 machine guns in addition to its normal bomb load. Two of its guns are mounted in the tail, two in the top turret, three in the nose, two in the side casements and four as new package guns on the fuselage. These package guns have been very successful and have also been installed on the Mitchell's fast stablemate, the B-26 Marauder (*below*). The B-26F is the latest model in the Martin series. The strong straight wing is set at a new angle of incidence, improving the Marauder's traditionally tricky take-off and landing characteristics.



Bumps made by new guns alter the B-26's hitherto symmetrical head-on appearance.



Package guns, fixed to fire forward, flank the Marauder's fuselage. The installation visible here is duplicated on the starboard side. The

B-26 can still be recognized by shoulder wing, thick body and tall fin and rudder. Rounded tail cone and gun position are now standard.



# AIRCRAFT RECOGNITION TRAINING LIST ~~RESTRICTED~~

THESE LISTS ARE DESIGNED MERELY TO GUIDE RECOGNITION TRAINING IN AIRCRAFT AND ARE NOT TO BE CONSTRUED AS SUPERSEDING ANY PREVIOUSLY ISSUED DIRECTIVE. CLASS A COMPRISES AIRCRAFT THAT ARE OPERATIONALLY MOST IMPORTANT. CLASS B COMPRISES AIRCRAFT

THAT ARE OPERATIONALLY IMPORTANT IN SOME AREAS AND/OR ARE NUMERICALLY LESS IMPORTANT THAN CLASS A, AND ALSO AIRCRAFT WHICH, THOUGH NUMERICALLY IMPORTANT, ARE BEING GRADUALLY REPLACED. EMPHASIS SHOULD BE PLACED ON AIRPLANES IN CLASS A.

## U. S. NAVY

CLASS A		
DESIGNATION	COMMON NAME	TYPE
F4F (FM-2)	WILDCAT	1E-SSF
F6F	HELLCAT	1E-SSF
F4U	CORSAIR	1E-SSF
OS2U	KINGFISHER	1E-S/O
SBD	DAUNTLESS	1E-S/B
SB2C	HELLDIVER	1E-S/B
TBF	AVENGER	1E-T/B
PBY-5 & 5A	CATALINA	2E-P/B
PV-1	VENTURA	2E-P/B
PBM-3C	MARINER	2E-P/B
CLASS B		
J2F	DUCK	1E-J
SOC		1E-S/O
SNJ	TEXAN	1E-S/N
PB2Y	CORONADO	4E-P/B

## U. S. ARMY

CLASS A		
P	COMMON NAME	TYPE
P-38	LIGHTNING	2E-SSF, R
P-39	AIRACOBRA	1E-SSF
P-40	WARHAWK	1E-SSF
P-47	THUNDERBOLT	1E-SSF
P-51 (A-36)	MUSTANG	1E-SSF
P-61	BLACK WIDOW	2E-2S(n)F
P-63	KINGCOBRA	1E-SSF
A-20	HAVOC	2E-LB, 2SF
A-26	INVADER	2E-MB
B-17	FORTRESS	4E-HB
B-24	LIBERATOR	4E-HB
B-25	MITCHELL	2E-MB
B-26	MARAUDER	2E-MB
B-29	SUPERFORTRESS	4E-HB
C-46	COMMANDO	2E-C
C-47	SKYTRAIN	2E-C
C-54	SKYMASTER	4E-C
C-87 (B-24)	LIBERATOR EXPRESS	4E-C
CLASS B		
C-60	LODESTAR	2E-C
A-29	HUDSON	2E-LB
A-30	BALTIMORE	2E-LB
A-31 (A-35)	VENGEANCE	1E-DB
CG-4A		G
CG-13		G
L-4	PIPER GRASSHOPPER	1E-L
L-5	SENTINEL	1E-L

## BRITISH—RAF

CLASS A		
DESIGNATION	COMMON NAME	TYPE
	SPITFIRE	1E-SSF
	HURRICANE	1E-SSF
	TYPHOON	1E-SSF
	TEMPEST V	1E-SSF
	MOSQUITO	2E-2SF, LB
	BEAUFIGHTER	2E-2SF
	WELLINGTON	2E-MB, T/B
	BEAUFORT	2E-T/B, R
	LANCASTER	4E-HB
	HALIFAX	4E-HB
	STIRLING	4E-HB
	SUNDERLAND	4E-P/B
	ALBEMARLE	2E-GT/C
CLASS B		
	WARWICK	2E-C
	HAMPDEN	2E-MB, T/B
	MASTER	1E-N
	BLLENHEIM	2E-MB

## AMERICAN AIRCRAFT USED BY RAF

DESIGNATION	COMMON NAME	TYPE
P-51	MUSTANG	
A-20	BOSTON	
A-29	HUDSON	
A-30	BALTIMORE	
B-25	MITCHELL	
PV	VENTURA	
B-24	LIBERATOR	
PBY-5	CATALINA	
P-40	KITTYHAWK	
A-31	VENGEANCE	

## BRITISH FLEET AIR ARM

CLASS A		
DESIGNATION	COMMON NAME	TYPE
	SWORDFISH	1E-T/B, R
	BARRACUDA	1E-T/B
	FIREFLY	1E-2SF
CLASS B		
	ALBACORE	1E-T/B, R
	SEA OTTER	1E-R
OTHER AIRCRAFT USED BY FLEET AIR ARM (ON U.S. AND RAF LISTS)		
	SEAFIRE	1E-SSF
	SEA HURRICANE	1E-SSF
F4F	WILDCAT	1E-SSF
F6F	HELLCAT	1E-SSF
F4U	CORSAIR	1E-SSF
TBF	AVENGER	1E-T/B

## RUSSIAN

CLASS A		
DESIGNATION	COMMON NAME	TYPE
LA-5		1E-SSF
LAGG 3		1E-SSF
YAK-9		1E-SSF
IL-2 & IL-3	STORMOVIK	1E-LB
PE-2		2E-DB
SB-3		2E-MB
PE-2B (PE-3)		2E-LB
DB-3F (IL-4)		2E-MB, T/B
TB-7		4E-HB
YAK-4 (BB-22)		2E-LB, R
CLASS B		
YAK-1 (I-26)		1E-SSF
MIG-3 (I-18)		1E-SSF
I-16		1E-SSF
SU-2		1E-LB, R
ER-2		2E-MB
AR-2 (improved SB)		2E-MB
DB-3		2E-MB, T/B
AMERICAN AIRCRAFT USED BY RUSSIANS (ON U.S. ARMY AND NAVY LISTS)		
P-39	AIRACOBRA	1E-SSF
P-40	WARHAWK	1E-SSF
P-51	MUSTANG	1E-SSF
A-20	HAVOC	2E-LB
B-25	MITCHELL	2E-MB
PBY (GST)	CATALINA	2E-C
C-47 (PS-84)	SKYTRAIN	2E-C

## GERMAN

CLASS A		
DESIGNATION	COMMON NAME	TYPE
ME-109 F & G		1E-B, SSF
ME-110 F & G		2E-B, 2SF
ME-410*		2E-B, 2SF
ME-210*		2E-B, 2SF
FW-190A		1E-B, SSF
JU-87D	STUKA	1E-DB
JU-88A, C & S		2E-MB, DB, F, R
HE-111H		2E-MB, T/B
JU-188		2E-MB, DB
DO-217E, K & M**		2E-MB, DB
HE-177		2E-HB, R
JU-52		3E-C, GT
ME-323		6E-C
FW-200C	KURIER	4E-HB
JU-290		4E-C
CLASS B		
AR-196		1E-R, FP
BV-138		3E-P/B
BV-222		6E-P/B
HS-129		2E-LB
HE-115		2E-R, FP, T/B
FW-189		2E-LB, R
HS-126		1E, R
FI-156		1E-L
JU-90		4E-C
JU-86P		2E-LB, R
DFS-230		G
GO-242		G
GO-244		2E-C

\*NOTE: RECOGNITIONALLY THE SAME  
\*\*NOTE: DIFFERENCE IN M MODEL

## JAPANESE

CLASS A		
DESIGNATION	COMMON NAME	TYPE
T-3	TONY	1E-SSF
T-2	TOJO	1E-SSF
T-2	NICK	2E-2SF
T-1, MARK 1 & 2	OSCAR	1E-SSF
T-0, MARK 1 & 2	ZEKE	1E-SSF
T-0, MARK 2	HAMP	1E-SSF
T-2	RUFE	1E-SSF, FP
T-0	PETE	1E-R, FP
T-0	JAKE	1E-FP, DB
T-100, MARK 1 & 2	DINAH	2E-R
T-2	JUDY	1E-R, DB
T-99, MARK 1 & 2	VAL	1E-DB
T-97	KATE	1E-T/B
T-2	JILL	1E-T/B
T-1	BETTY	2E-MB, T/B, R
T-100	HELEN	2E-MB, T/B
T-99, MARK 1 & 2	LILY	2E-LB
T-97, MARK 1, 2, 3	SALLY	2E-MB
T-96, MARK 2	NELL	2E-MB, T/B
T-2	EMILY	4E-P/B
T-97	MAVIS	4E-P/B
CLASS B		
T-97	NATE	1E-SSF
T-95	DAVE	1E-R, FP
T-99	SONIA	1E-LB, R
T-99	CHERRY	2E-FB
T-MC-20	TOPSY	2E-C
T-DC-2	TESS	2E-C
T-LOCKHEED	THELMA	2E-C

## ABBREVIATIONS

B..... BOMBER	L..... LIAISON	GT..... GLIDER TUG	S/N..... SCOUTING, TRAINING	2SF..... TWO-SEAT FIGHTER
C..... CARGO	N..... TRAINER	HB..... HEAVY BOMBER	S/O..... SCOUTING OBSERVATION	1E..... SINGLE-ENGINE
F..... FIGHTER	R..... RECONNAISSANCE	LB..... LIGHT BOMBER	T/B..... TORPEDO BOMBER	2E..... TWIN-ENGINE
G..... GLIDER	DB..... DIVEBOMBER	MB..... MEDIUM BOMBER	SSF..... SINGLE-SEAT FIGHTER	3E..... THREE-ENGINE
J..... UTILITY	FB..... FLYING BOAT	P/B..... PATROL BOMBER		4E..... FOUR-ENGINE
	FP..... FLOATPLANE	S/B..... SCOUT BOMBER		6E..... SIX-ENGINE

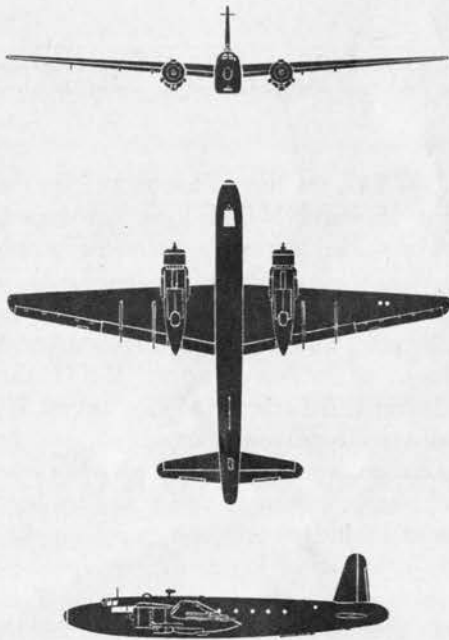


# NEW AND REVISED AIRPLANE SILHOUETTES



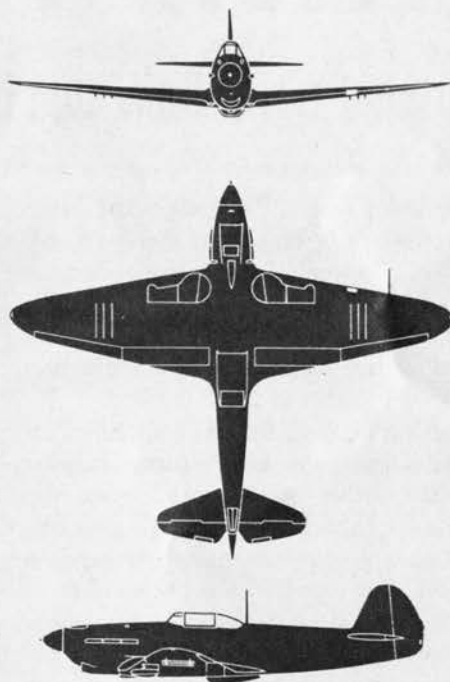
## SPITFIRE XII

SPAN 32 FT., 2 IN.    LENGTH 30 FT., 9 IN.  
GRIFFON ENGINE POWERS LATEST VERSION



## WARWICK

SPAN 97 FT.    LENGTH 70 FT., 9 IN.  
TRANSPORT DEVELOPED FROM WELLINGTON

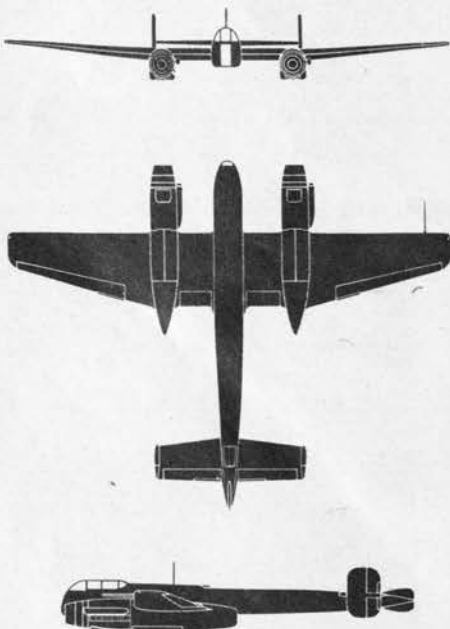


## YAK-9

SPAN 32 FT., 9 IN.    LENGTH 27 FT., 10 IN.  
SOVIET FIGHTER HAS NEW COCKPIT COVER

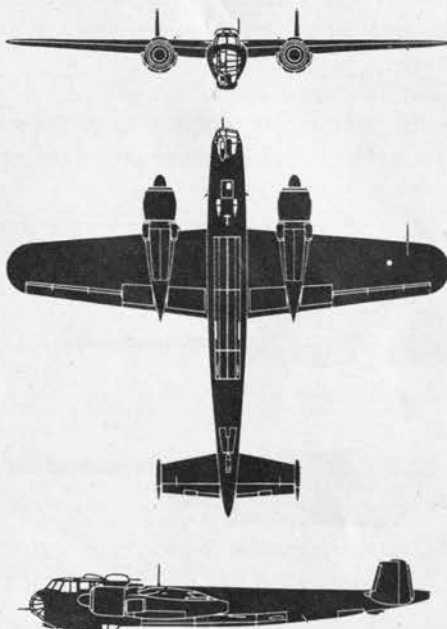
**Recent Allied types** shown in the above silhouettes are all variations on proven combat designs. Both the Spitfire and Yak have long been fighter standbys while basically the Warwick is a grace-

ful and enlarged cargo adaptation of the Wellington, veteran British bomber. Pictures and further information on the Yak-9 will be found on page 33 while the new Warwick is featured on page 13.



## AR-240

SPAN 50 FT.    LENGTH 39 FT., 9 IN.  
ARADO RECONNAISSANCE FIGHTER-BOMBER



## DO-217E

SPAN 62 FT., 5 IN.    LENGTH 56 FT., 6 IN.  
MINOR REVISIONS ON GERMAN BOMBER



## HELEN

SPAN 66 FT., 7 IN.    LENGTH 53 FT.  
NEWEST JAP MEDIUM BOMBER HERE UPDATED

**Enemy innovations** include Germany's twin-engine Arado-240, an interesting new multipurpose aircraft. Apparently the Ar-240 was specially designed for reconnaissance, fighting and possibly bomb-

ing. Heretofore the Luftwaffe has relied on standard types such as various models of the Do-217 and Ju-88 for these types of work. Photographs of the new Nazi plane appear on page 14 of this issue.



# TANK TURRETS

## National turret lines supply best recognition features

The tank's reason for being is the gun it carries; it is firepower that pays off. Each of the world's great armies has developed its own favorite guns, and the turrets which house them form the best identification feature for the tanks and armored vehicles of these nations.

Passing through brush or obscured by swirls of dust, the tank's turret may be its only visible portion. And when the tank is dug in, as it often is on static fronts, the turret is again the only part exposed to view. The ground or aerial combatant can best serve his cause by becoming thoroughly acquainted with the characteristics of the tank turrets shown on this and the following pages.

In general, turrets are designed to protect the breech and loading mechanism of the gun and to guard the lives of the men who service it. To do this, they are covered with the heaviest practicable armor, so arranged as to stop or deflect any projectile thrown against them. The bulk of the turret is restricted in height and width to supply the smallest possible target.

There are certain national differences in turrets which can be pointed out as an aid to recognition. U.S. turrets (pp. 20, 21), are generally round or rounded, with the gun mantlet fitted close against the inclined face of the turret. In the two chief versions of the Sherman, the M-4

and M-4A1, the turrets are dome-like; the light M-5 and M-5A1 have flat-topped, straight-sided turrets with sides which curve at front and rear. A major break in U.S. turret lines is caused by the radio equipment which is housed in a bulge at the rear of the turrets on the M-5A1, the airborne T-9E1 and the M-4 mounting the high-velocity 76-mm. gun.

Changes in the Russian and German tanks have been more varied and are best traced in the pictures on pages 22, 23. The main line of Russian turret development is seen in the evolution of the T-34 from the squat turret on early models to the taller, heavier turret with reinforced gun mantlet found on current types. German turrets are generally distinctive for their size and angularity, their undercut front corners, prominent cupola and long, muzzle-braked guns.

Turret position as well as shape is an assisting factor in recognizing tanks. On U.S. tanks the turret is usually just forward of the center of the hull. Russian turrets sit well to the front so that the protruding gun seems to be lunging forward, while the turrets of the German Mark IV and V are set squarely amidhull. The gigantic gunhouse of the Mark VI is, however, placed forward.

For the most important turrets used by the four major tank-building nations refer to the half dozen silhouettes below.



U. S. LIGHT TANK, M-5A1



U. S. MEDIUM TANK, M-4



BRITISH CROMWELL



RUSSIAN MEDIUM T-34



GERMAN MEDIUM PzKw MARK IV



GERMAN HEAVY PzKw MARK VI



DERELICT M-10 SELF-PROPELLED GUN AND M-4 TANKS LIE ON ANZIO-ROME ROAD. AERIAL VIEW DISTINGUISHES BETWEEN M-10'S OPEN-TOPPED, PENTAGONAL TURRET AND M-4'S FLAT-TOPPED DOME



# EVOLUTION OF THE U.S. TANK TURRET



In Buna, New Guinea Aussies fire from behind an early U.S. light tank. This is the General Stuart, forerunner of the M-5 shown below. Note high angular cupola on top of round turret.



Marines in U. S. M-5's plow through a clearing in the fight for the Munda airfield. M-5 turret has discarded the cupola of the General Stuart, is still cylindrical, with forward slope to its top.



Newest model light tank, M-5A1, moves up on Namur Island, Kwajalein Atoll. Its turret is like the M-5's with the exception of a boxlike extension in the rear which houses the tank's radio.



Mopping up the Japs in Bougainville was a lot safer with a U.S. M-4 General Sherman tank to

provide cover. The M-4 is successor to the M-3 (below, center) as our standard medium tank. Its

turret is large and dome-shaped, smoothly rounded. The slight bulge in rear is radio. Turret is just forward of hull's center. Convex gun mantlet fits closely against the sloping turret face.



The M-3 General Grant was our original medium tank. Its small, dome-shaped turret with a high

cupola is mounted on the left side of the hull. We used many M-3's in North Africa.



Breaking through to the Gustav Line, tankmen halt to widen a narrow lane. Cast turret of their M-4 looks broad and low, round and flat-topped. A newer turret has two hatches. Standard gun is 75-mm.



# TWO RUSSIAN TANK TURRETS AND FOUR GERMAN TYPES



**Russian medium tanks** crossing the frozen ground of the Southwestern front in 1942 mounted 76.2-mm. guns in a shallow, flat-topped, bullet-shaped turret with bulging gun mantlet and sloping sides. Excel-

lent as the performance of the T-34 was with this early turret, Russians have seen fit to mount a larger, heavier turret shown below. It is characteristic of their turrets to be set far forward on the hull.



**Prominent head-on** recognition feature of later T-34 turret is the enlarged gun mantlet with bulbous, cheeklike protrusions on either side of triangular block at base of gun barrel. New turret has twin hatches.

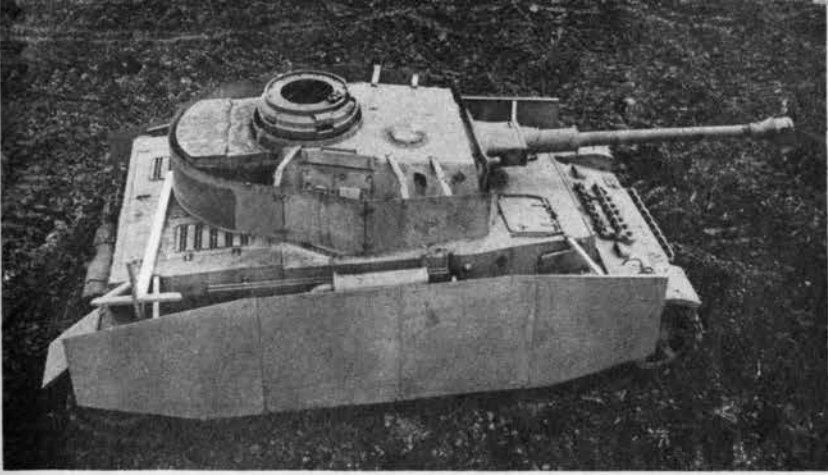


**Profile of new turret** is tall, conical. Bulging gun mantlet set against inclined face of the turret resembles that of Russian heavy tank, KV-I. The battalion commander, in the foreground, drills tankmen in tactics.



**On the Bryansk front**, approximately a year after the battle depicted at top of page, Russian T-34's with newer, heavier turret take their positions. Imposing 76.2-mm. gun mantlet protrudes over the hull bow.





**Nazi PzKw Mark IV** has appeared in Italy and on the Eastern Front with spaced armor bracketed to the turret wall and to the sides of the hull. The broadened turret silhouette looks much like that of the Tiger shown below.



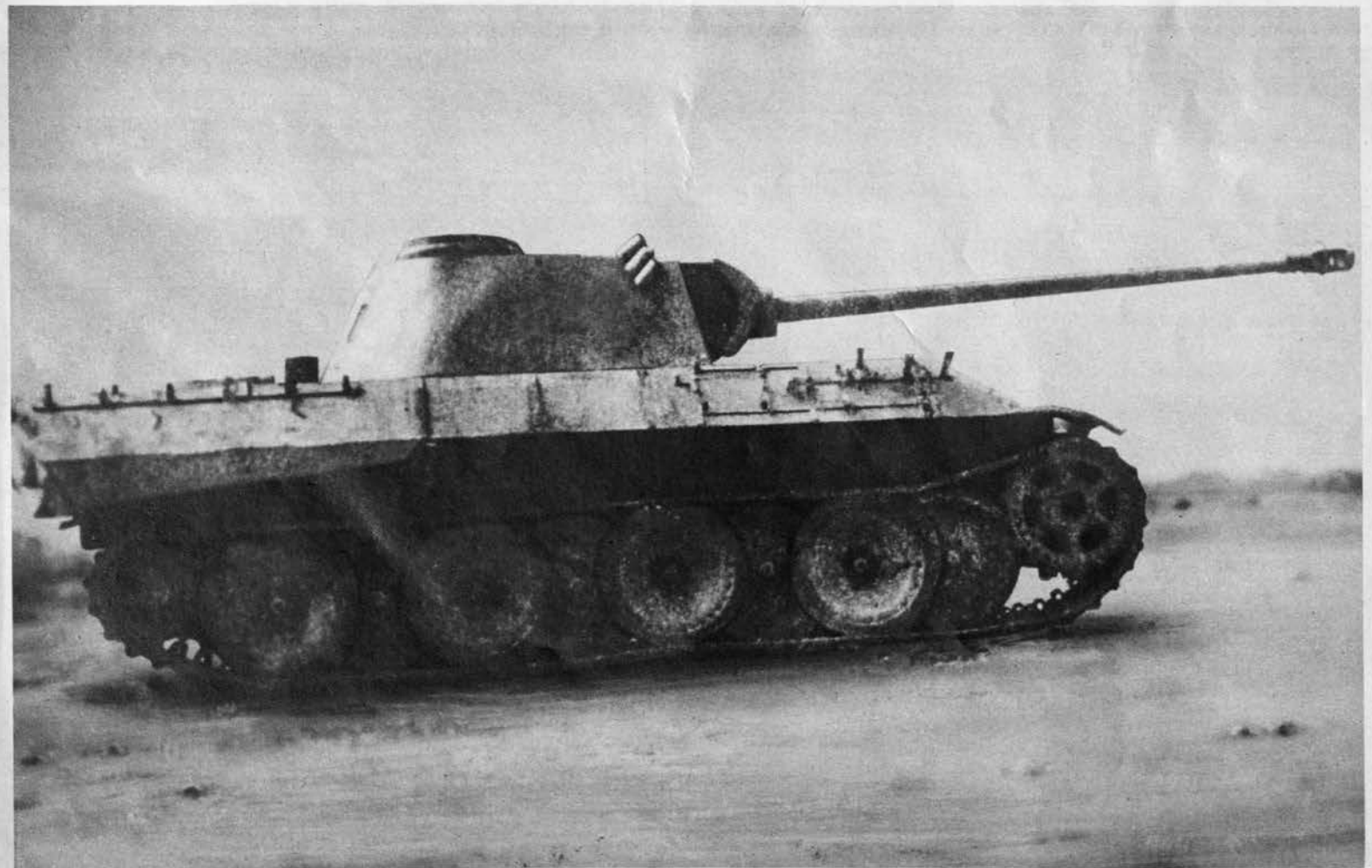
**Without spaced armor** Mark IV turret is angular and sprawling. Its top slopes down gradually toward rectangular mantlet. Tall cupola looks like spare tire. Behind hangs the stowage bin.



**Muscleman of Nazi tanks** is the Mark VI, or Tiger, which has a huge cylindrical turret housing its 88-mm. gun. Turret top slopes toward the gun mantlet, ends in a wide flat face. The rear stowage bin is absent in this picture.



**Tiger is impressive** in head-on view. Long-barreled gun with large muzzle brake points from the broad flat face of forward-sitting turret. The prominent cupola is offset to the left and rear.



**Germany's newest tank**, the PzKw Mark V, the Panther, represents a departure from previous Nazi turret designs. Retaining the characteristic German cupola and large, jutting gun mantlet, it has replaced

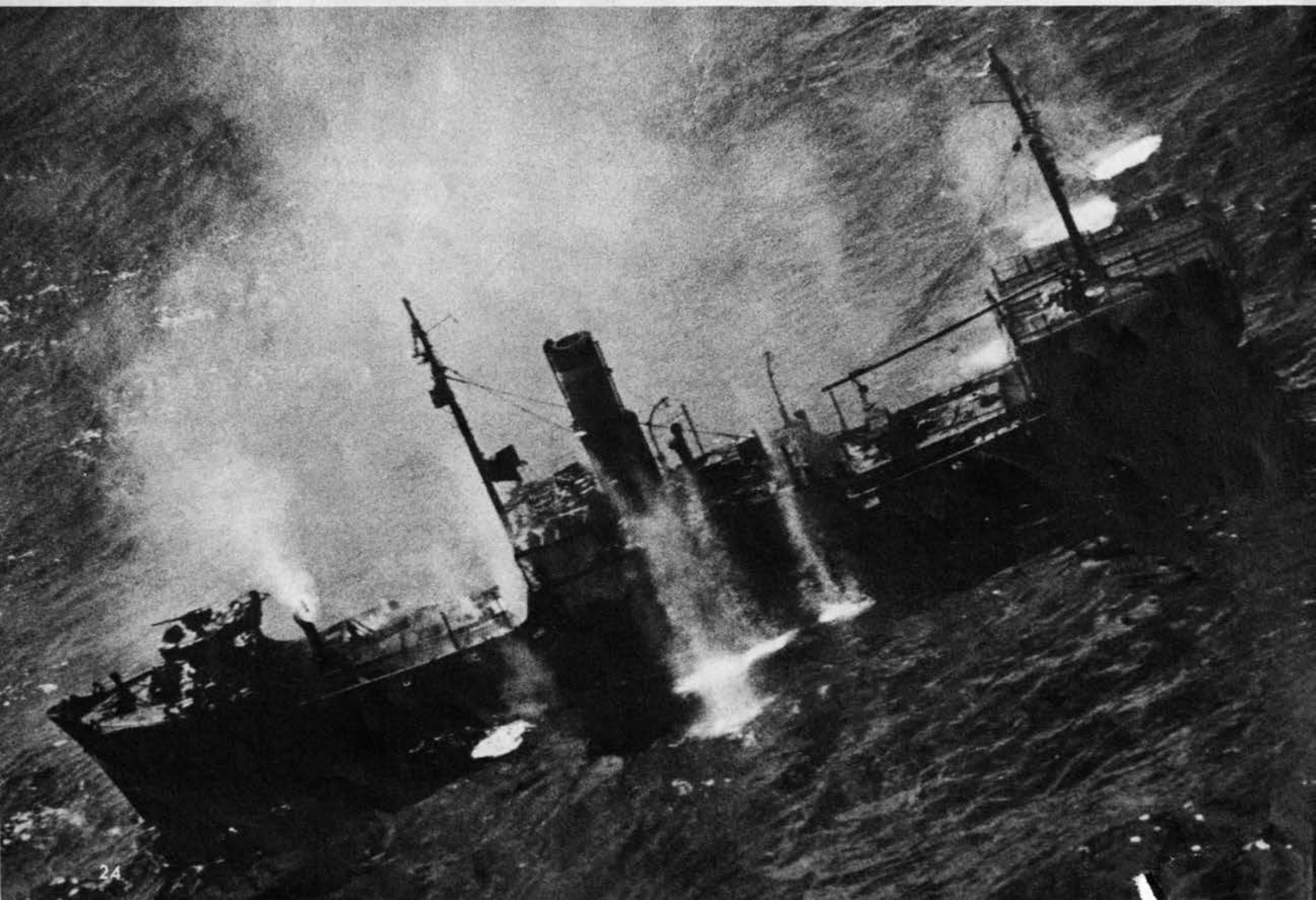
the angular construction found in the turrets of the Marks II, III and IV with a slope-sided, bulletlike appearance resembling that of the turret on the early Russian T-34. Gun barrel is very long and thin.





NACHI CLASS HEAVY CRUISER TRIES TO DEFEND JAP MERCHANT SHIPS FROM U. S. PLANES. SHIP BURNING IN FOREGROUND IS OLD PASSENGER-CARGO

U. S. PLANES DOVE LOW TO STRAFE THIS SMALL JAP VESSEL NEAR ENIWETOK. AN OLD THREE-ISLAND FREIGHTER, IT HAS HIGH POOP, LARGE HATCHES



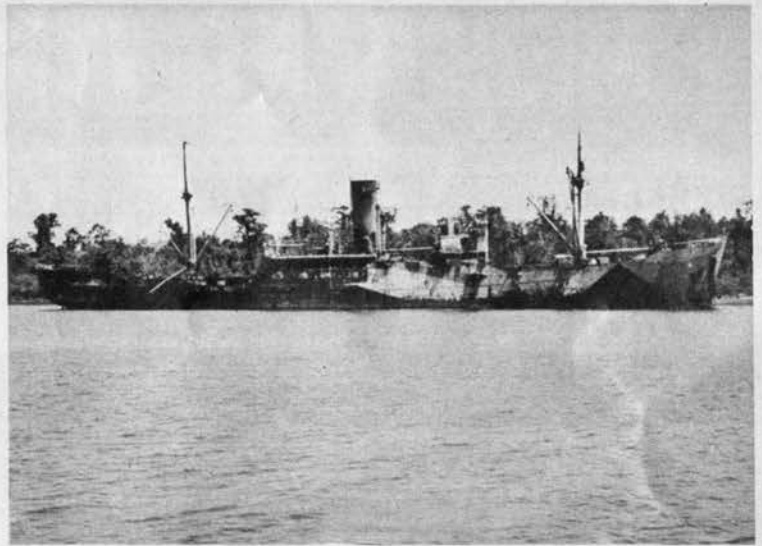


# JAPANESE CARGO SHIPS

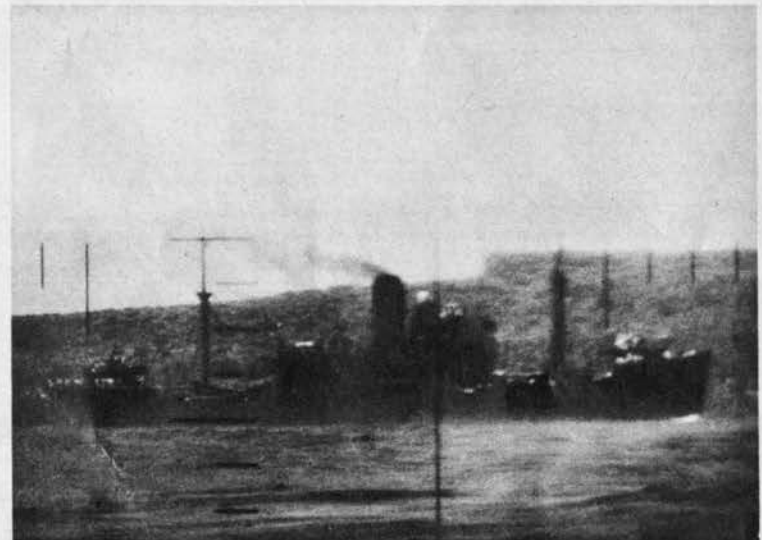
Japan is frankly worried by her merchant-shipping losses. Her original fleet has been cut in half. Out of the approximately 7,500,000 tons with which she began the war in the Pacific, over 3,000,000 tons have been sunk by Allied planes and submarines. Much of this lost tonnage represents fine new shipping built in the '30's. Dreaming of a vast Asiatic Empire, Japan had concentrated on fast ships with long cruising range, on tankers and freighters that could travel with her conquering fleet. It was this shipping advantage with which she hoped to defeat the U.S. and Britain in a war of long supply lines.

But with the blasting of her merchant marine at Rabaul, Truk and Palau, and with the mounting torpedoing by cruising Allied subs, Japan's ocean transportation has become its most critical problem. Japs are eating less and less as more bottoms are needed to carry war goods. So difficult is the task of bringing oil from Burma and the Dutch East Indies, that in Japan they are trying to produce artificial liquid fuel from coal. And the Japanese are currently obliged to use warships to carry men and matériel.

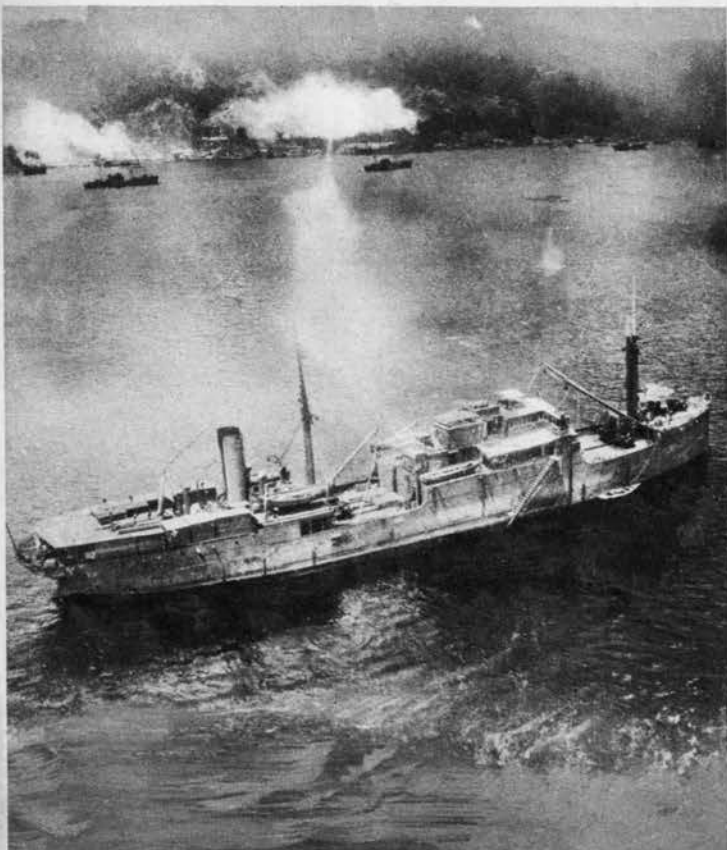
Much of the work of supplying Japan's small Pacific bases is done by barges and small coasters. Some of these are illustrated on page 28. Larger Jap merchant ships have few pronounced national characteristics and, like the merchant ships of other nations, are impossible to recognize as purely national types. Silhouettes of these ships are shown on page 26. This is not intended to be a comprehensive account of the Japanese merchant fleet. A detailed description can be found in ONI 208-J (revised).



**Landing at Lae,** U. S. amphibious forces passed by this abandoned Jap troopship. It is old split-superstructure freighter with raked bow.



**U. S. submarine periscope** has picked up Jap freighter. Old features of tall stack and angular declivity combine with its newer raked bow.



**Another view** of smoking Simpson Harbor shows Haruna Maru, an old engines-aft freighter with large island forward of amidships.



**Freighter-transport** in Simpson Harbor carries Jap trademark in tall thin goal-posts with arched truss. A landing craft rides off its bow.

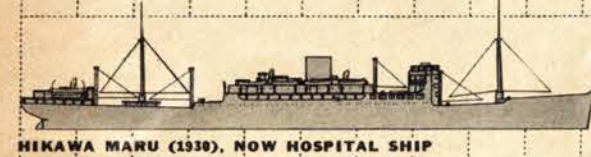


# MERCHANT VESSELS

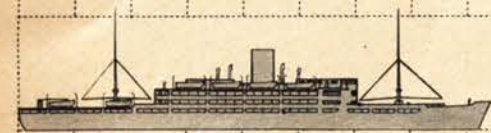
## PRINCIPAL DESIGNS OF SECONDARY MERCHANT NAVIES

RESTRICTED

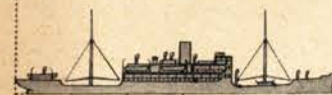
### JAPANESE PASSENGER



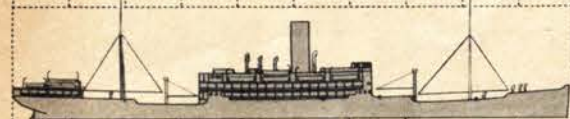
HIKAWA MARU (1938), NOW HOSPITAL SHIP



KOKURYU MARU, MODERN LINER

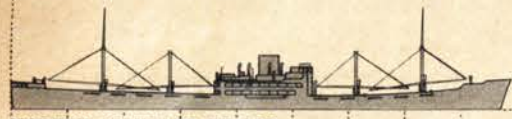


TYOZO MARU, OLD DESIGN

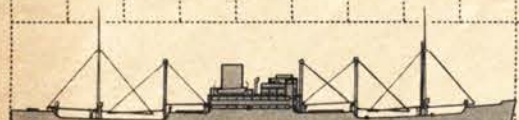


HAKUSAN MARU, PASSENGER-CARGO

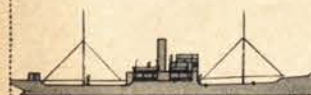
### CARGO, COMPOSITE SUPERSTRUCTURE



MODERN STANDARD DESIGN



STANDARD DESIGN, WITH EXTENDED AMIDSHIPS ISLAND



MAYATI MARU, WORLD WAR I DESIGN



SMALL MODERN FREIGHTER OF LARGE CLASS



OLD STANDARD DESIGN

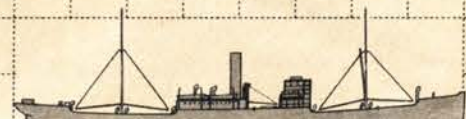
### CARGO, SPLIT SUPERSTRUCTURE



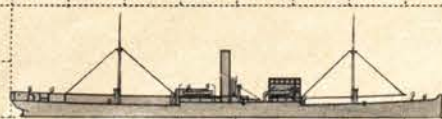
MODERN FREIGHTER OF LARGE CLASS



OLD STANDARD DESIGN



HAMBURG MARU, OLD DESIGN



OLD SPLIT-SUPERSTRUCTURE TYPE



KATYOSAN MARU, OLD; NOW AK

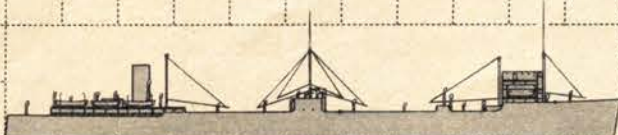
### ENGINES-AFT TYPES



MODERN LONG-RANGE TANKER



SAN DIEGO MARU, OLD TANKER



TONAN MARU, MODERN WHALE FACTORY

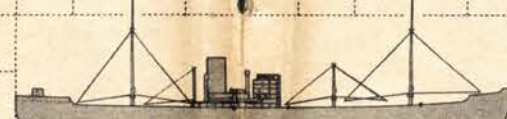


OLD STANDARD DESIGN, SPLIT SUPERSTRUCTURE

### GERMAN CARGO



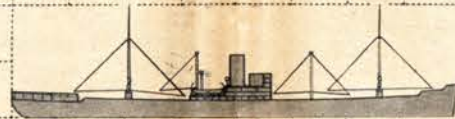
REICHENFELS, LARGE MODERN DESIGN



LARGE MODERN RAIDER TYPE



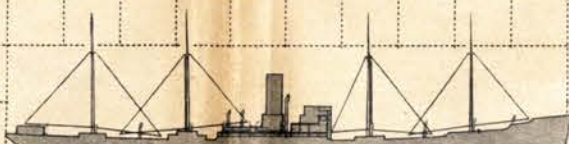
MATHIAS STINNES, AMIDSHIPS ORE CARRIER



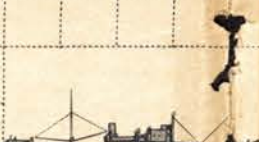
MODERN FREIGHTER



SMALL MODERN; USED AS SPEERBRECHER

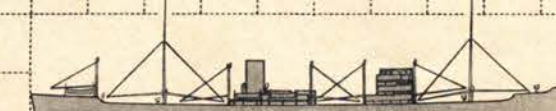


MARBURG, SPEERBRECHER TYPE



GAUSS, SMALL BALTIC TYPE

### NORWEGIAN CARGO



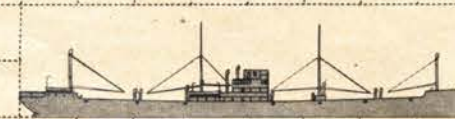
TAMERLANE, TYPICAL MODERN NORWEGIAN



SONNAVIND, MODERN WITH MAIERFORM BOW

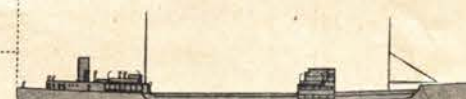


CALIFORNIA EXPRESS, MODERN, REFRIGERATED



VILLANGER, MODERN, NO FUNNEL

### ENGINES-AFT TYPE



ARENA, MODERN, TRUNKED-DECK OILER

### SWEDISH CARGO



TUNAHOLM, MODERN, SIMILAR TO JAPS



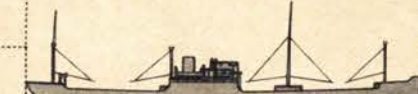
VAALAREN, MODERN MOTORSHIP

### RUSSIAN PASSENGER-CARGO

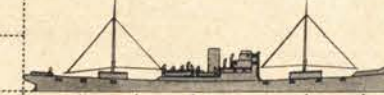


TYPICAL SMALL MODERN P & C

### CARGO

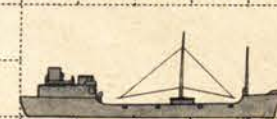


SEVZAPLES, LARGE CLASS WITH BALTIC RIG



KUBAN, TYPICAL OLD FREIGHTER

### ENGINES-AFT TYPE



DELEGAT, MODERN COASTAL CARGO

### DUTCH CARGO



WELTEVREDEN, MODERN, SPLIT SUPERSTRUCTURE



HERMES, NEW MEDIUM FREIGHTER



OLD SPLIT SUPERSTRUCTURE, ELECTRIC CRANES

The merchant ship silhouettes shown here complete our catalog of world types. In the June issue of the *Journal* we compiled standard U.S. and British designs. Here we conclude with the representative shipping of Japan, Germany, Norway, Sweden, Russia and The Netherlands, grouped according to nationality, utility and chronology.

A fuller account of Japanese shipping appears on pages 24, 25, 28 and 29. Her merchant navy ranks next in size after our own and the British. She built many fine vessels in the '30's which compare with the best among foreign designs and is still turning out small freighters in quantity. The German merchant marine, while suffering from a curtailed building program, has nevertheless been aug-

mented by seizures from occupied countries. Some of Germany's newest and fastest merchantmen have been detailed as Speerbrechers—raiders and blockade runners. Both Norway and Sweden have been shipbuilding countries for the world. Much fine Norwegian shipping is now serving the Allied cause. Sweden's building program is increasingly active. Over half of Soviet tonnage is foreign-built. We have omitted here her numerous, lend-lease-acquired U.S. Shipping Board and U.S. Maritime Commission types. Most of the large modern Dutch fleet is operated by the government in exile. Contrary to a statement in the grid in the June *Journal*, merchant ships do not have pronounced national characteristics. Only exceptions to this rule are the five USMC types shown on page 29.

SCALE: EACH SQUARE EQUALS 50 FT.







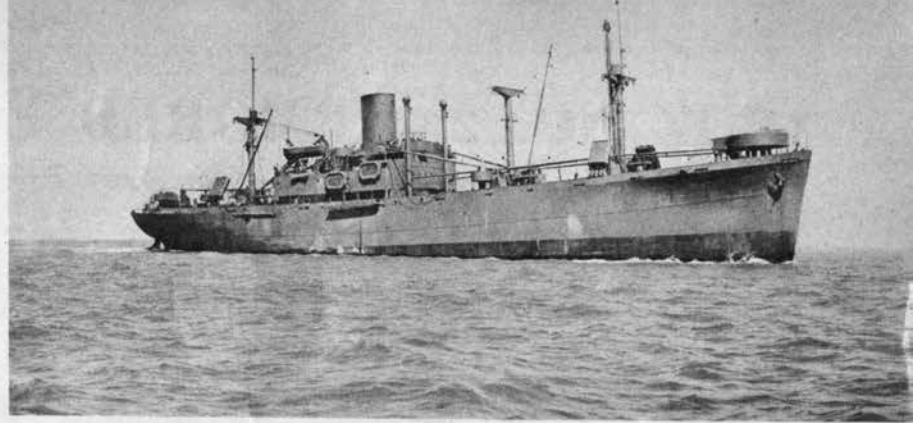
# SMALL JAP SHIPS

Japan's inter-island craft are distinctive but U.S. has the only unique large ships

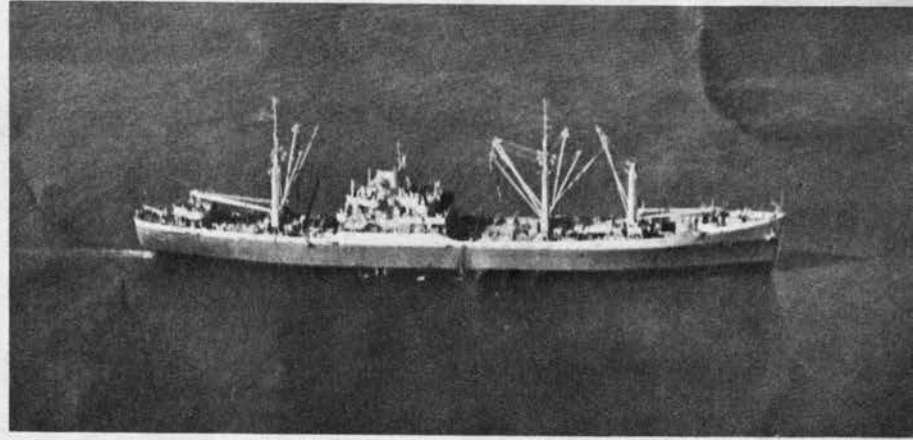
The heavy losses inflicted on her merchant marine in the Pacific have forced Japan to withdraw larger vessels from the inter-island supply routes in favor of barges and small coasters which are readily camouflaged and can operate in shallow, reef-infested waters, relatively safe from Allied destroyers and PT boats.

These small supply ships are peculiar to the Japs. Many of them, like the Sea Truck at upper left, look quite Oriental, like oceangoing junks, and are characterized by a pronounced hull sheer, clipper bow, and exaggeratedly high poop and forecastle. Oceangoing barges of various sizes usually travel by night and in the daytime take cover close to shore under overhanging trees or are camouflaged with palm branches so that they look like an extension of the shore (see lower left). Large barges travel from 40 to 70 miles a night, and, loaded to capacity, carry rations for 6,000 men for one day. Since 1942 U. S. planes have sunk over 1,000 Jap barges in the Solomons area alone.

The real problem, however, lies not in these small, readily recognized barges but in merchant ships of 500 tons and over. These have so many characteristics in common, whether U. S., British, Jap or Scandinavian, that only a handful of designs stands out as distinctive and numerous enough to stress. This handful is the U. S. Maritime Commission's "Big Five," the C-1, C-2, C-3, Liberty and the somewhat less distinctive Victory shown on the right. U. S.-built and designed, they form an important part of the merchant navies of all the Allies. Liberty ships now comprise 65 per cent of our fleet; "C" types alone, fine as any ships afloat, number eleven per cent. The quantity of Victory ships which will go to swell our wartime merchant marine is still to be determined. The first of these larger, faster, "emergency" types (lower right) went down the ways in February.



C-1 IS MEDIUM-SIZE FLUSH-DECKER, SUPERSTRUCTURE AFT OF AMIDSHIPS



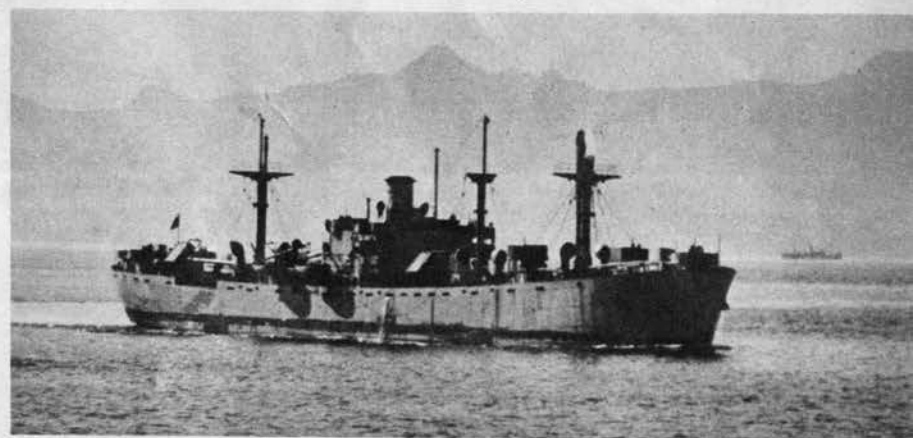
C-2 IS A LARGER DESIGN, HAS RAISED CENTER ISLAND AND FORECASTLE



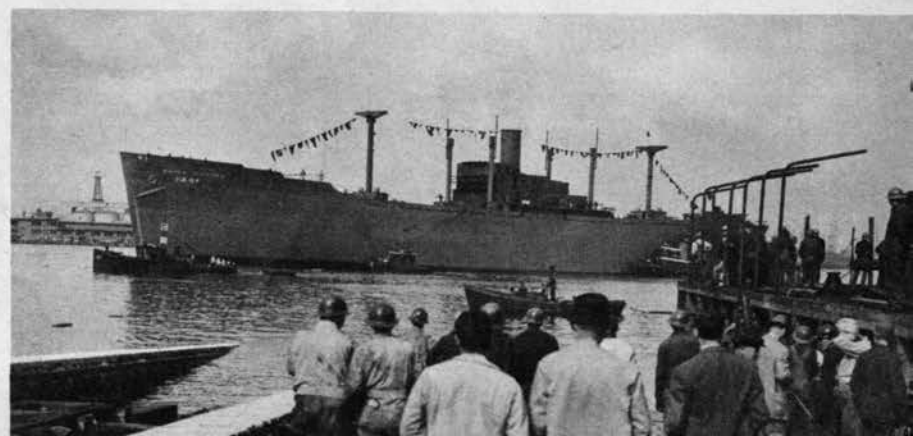
C-3 CARGO VESSELS HAVE CHIEFLY BEEN CONVERTED TO NAVAL AUXILIARIES



Engines-aft Sea Truck of more conventional hull design operates between adjacent islands. The Japs stretch canvas for shelter decks.

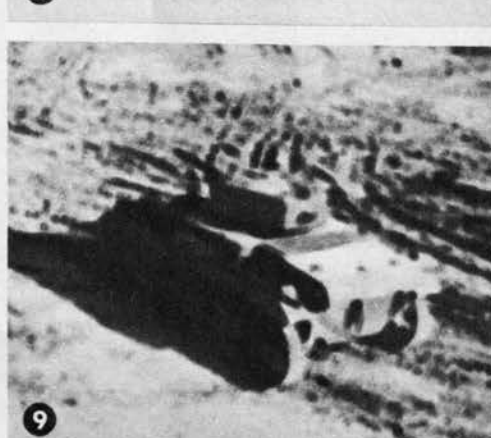
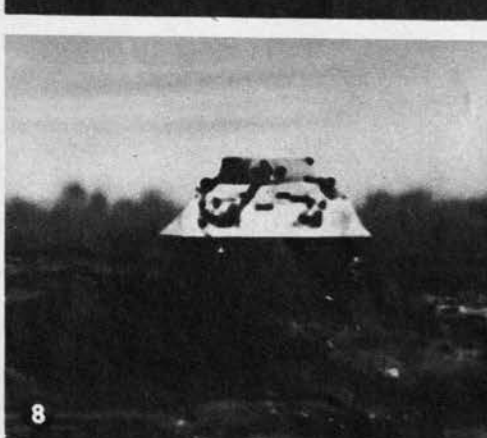
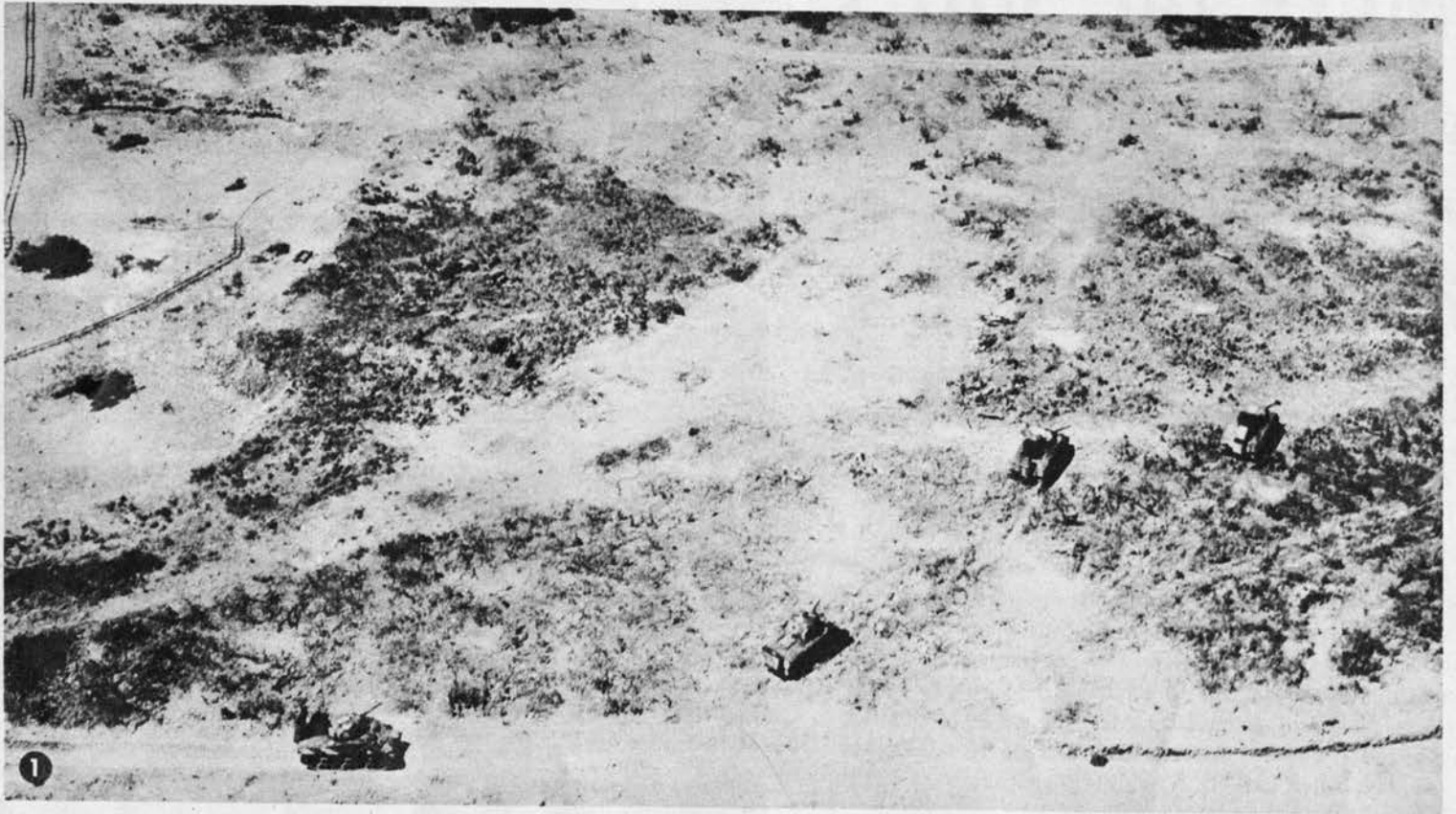


MASS-PRODUCED LIBERTY (ABOVE), VICTORY (BELOW) ARE MOST NUMEROUS





# QUIZ NO. 2: ARMORED EQUIPMENT IN ACTION







SIX IL-3 STORMOVIKS FLY LOW OVER MOUNTAINS AS THEY SWEEP IN TO ATTACK GERMAN TARGETS BEHIND FRONT

# RED AIR FORCE

## WESTERN ALLIES WILL MEET IT ON BALKAN FRONT

As the forces of the United Nations throng in on the German heartland from the west, south and east and Allied bombers begin their shuttle service to Russia and back, a hitherto slighted field of recognition becomes more and more important. Though previously British and American sorties have encountered stray Soviet planes, we are now meeting them in force. In preparation for the final stages of the air war over Europe, the *Journal* herewith presents the latest pictures and information about the Soviet Air Force.

Until recently, the nature of the Red Air Force has been an enigma. Clouded by Russian censorship and propaganda, the Soviet concept of airpower has seemed contradictory. Before the war, Soviet releases emphasized the bigness of everything. The planes were gigantic and they came in flocks. As one American versifier put it: "Russians tall, Russians cute, Russians all parachute." Strategic bombing and airborne attack seemed to be the backbone of Soviet air strength.

But the early news from the eastern front contained practically no mention of large bombing raids. Faced with the immense distances involved in their extended battle lines, the Russians wisely spent their limited supplies of fuel

in attacks on front-line targets. Though Russia had pioneered the first four-engine plane—Igor Sikorsky's giant biplane Ilya Mourometz—the first wartime Soviet aircraft to attain fame was the single-engine attack plane Il-2, the Stormovik. Since then the Soviet aircraft industry has concentrated on types suitable for ground attack. Most Red fighters are low-altitude craft suitable for strafing and rocket launching. Their most active bombers

are mediums such as the various models of the Stormovik, the Pe-2, SB-3 and DB-3. The favorite lend-lease equipment has been P-39's, P-40's, P-51's, A-20's, and B-25's, all planes with good performance close to the ground.

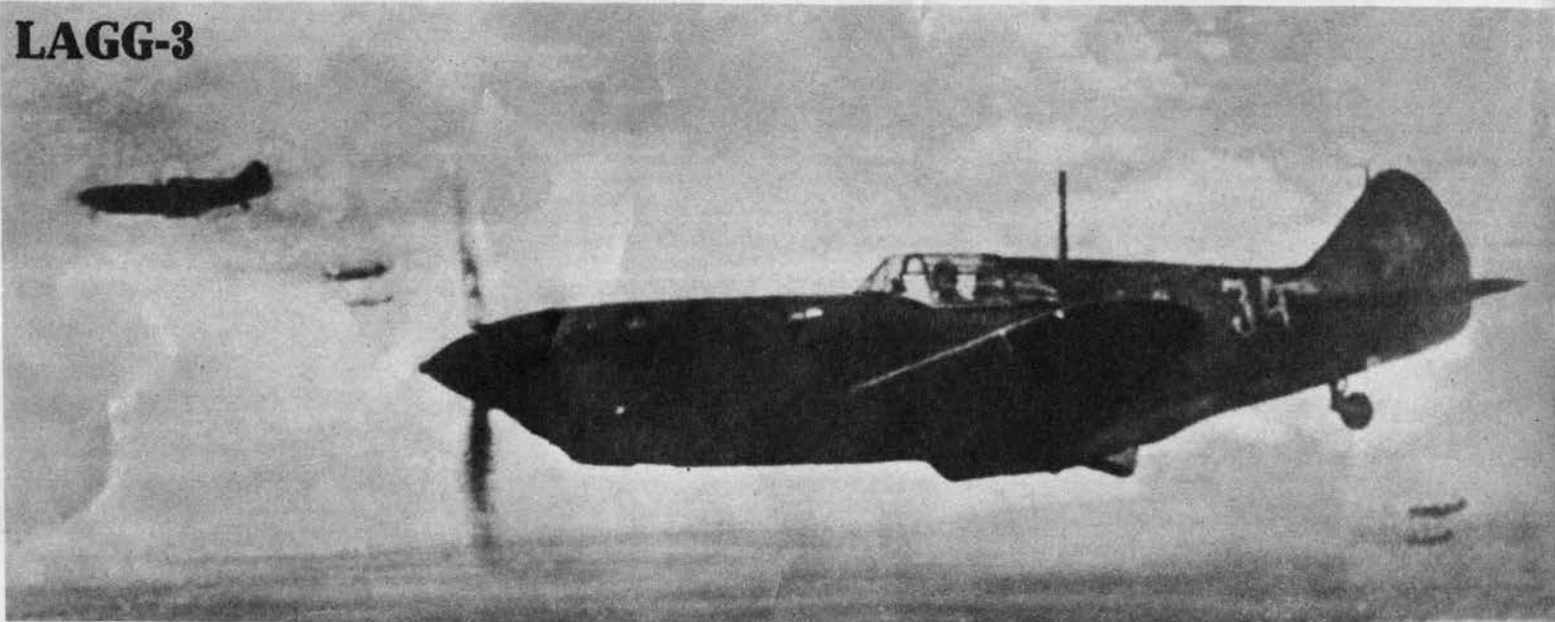
But as the improved Soviet fighters have destroyed German air superiority and Russian ground troops have overrun the Wehrmacht, Russian bombers are reaching out. Red fliers have lashed out at Lwow, Brest-Litovsk and other communication and supply centers, have blasted German shipping in the Black and Barents Seas. Recently, red-starred bombers appeared over Berlin. And as the opposing air fronts shrink, three great air fleets—the USAAF and the two RAF's, the Royal Air Force and the Red Air Force—will coalesce into a dominating air screen over Hitler's European fortress.



TOP RED ACE, Lieut.Col. Alexander Pokryshkin has 59 victories.



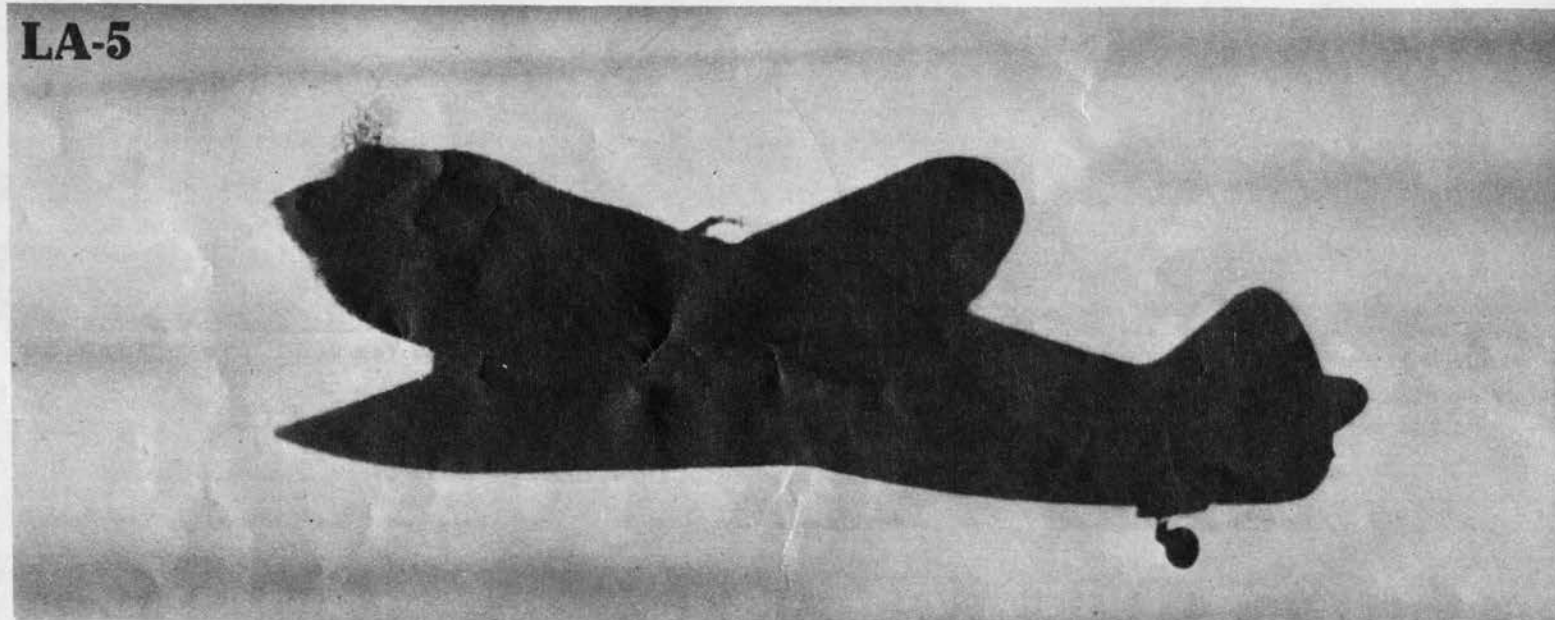
## LAGG-3



**LONG NOSE**, thick fuselage aft distinguish LaGG-3, oldest of Russia's three first-line fighters. Note large spinner with projecting cannon. Airscoop under nose gives broken line to fuselage. Leading edge

of the fin has gradual slope while the rudder's trailing edge is rounded. Tailwheel is fixed. The wing has moderate taper on leading edge, pronounced taper on trailing. Power plant is an 1,100-hp. inverted V-12.

## LA-5



**FASTEST SOVIET FIGHTER**, the La-5 gets its 385-m.p.h. speed from 1,600-hp. radial engine in the LaGG-3 airframe. It has been called Russia's answer to the FW-190 and resembles the latter somewhat. The

La-5's span is 32 ft., 2 in. and length approximately 29 ft., slightly smaller overall than Nazi counterpart. However, the La-5's maneuverability and rate of climb are definitely superior. Service ceiling is 36,000 ft.



**LARGE COWLING**, heavy spinner mark these La-5's warming up on snow-covered field. Modified version has cockpit canopy extending further aft, giving pilot better rearward visibility. Armament consists

of two 20-mm. cannon mounted in the cowling, while 12.7-mm. machine guns can be fitted in wing. La-5 design is credited to Lavochkin, while LaGG's represents joint effort of Lavochkin, Gorbunov, Gudkov.



## YAK-1



**WING SHAPE** of obsolescent Yak-1 is the same as that of Yak-9 (*right*), having nearly equal taper on the leading and trailing edges.



**AIRSCOOP** below nose breaks contour even more sharply than on LaGG-3 (*top left*). Yak-1's tailwheel is fixed, Yak-9's is retractable.



**YAK-1** was the first plane of the series culminating in Yak-9. Designed by Yakovlev, the Yak-1 was called the "Russian Spitfire."

## YAK-9



**ACCENTUATED FORWARD SWEEP** of rudder's trailing edge is an outstanding recognition feature on Yak-9. Essentially a cleaned-up Yak-1, this plane is the Red Air Force's standard inline pursuit. It has the blister-type canopy used in the latest U.S. and British modifications. Yak-9 has top speed near 350 m.p.h. and is used largely for escorting slow, heavy Stormoviks.







**BIG AND TOUGH**, the famed Stormovik (Il 2 & 3) is one of World War II's most effective planes. A formidable threat to Nazi Panzer units, it attacks them with heavy cannon and armor-piercing rockets,

charging in low all the way rather than diving. Speed and maneuverability have been sacrificed for armor installation, with 13-mm. plate completely surrounding cockpit and vital engine parts. The entire cowl-

ing is made of 6-mm. armor; the oil cooler, radiator, fuel tanks are thoroughly protected. Thus made almost proof against damage from small-arms fire, the Il-2 has the lowest loss ratio of any aircraft on the

Russian front. Yet despite the enormous weight of its armor and armament, Stormovik has conventional design. Its heavy nose, long fuselage, humped cockpit and pointed tail are the main recognition features.



**NAZI TANK COLUMN** is blasted by Stormoviks sweeping over highway. Their span is nearly 48 feet, length is 38 ft. Normal armament consists of two 23-mm. cannon, two 7.6-mm. machine guns, though

for special strafing missions two 37-mm. cannon may be carried. But the plane's big punch is in the form of 800-1,000 lb. of bombs and rockets. Speed is approximately 275 m.p.h.; service ceiling, 25,000 ft.



Model shown here is single-seat Il-2. Note the low wing with slight dihedral, graceful inward curve of the rudder's trailing edge. Il-3 (right) carries pilot and gunner who operates 12.7-mm. gun in dorsal position.



**STORMOVIKS** roaring over hills can be identified as Il-3's by rear-firing guns. The Russians call any attack bomber "Stormovik," but U. S. usage confines term to Ilyushin model described on these pages.



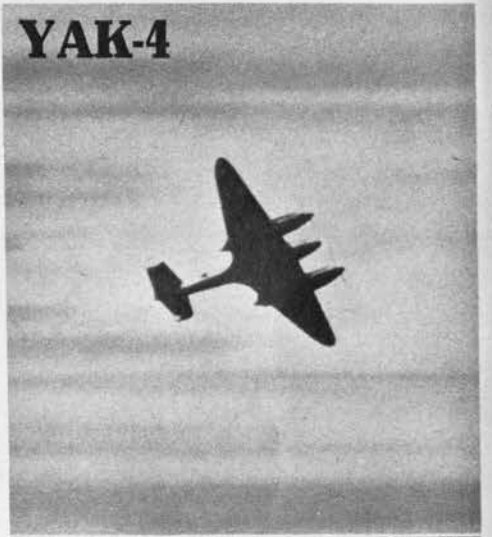
## SU-2



**RECONNAISSANCE AND GROUND ATTACK** are main functions of Su-2. Designed by Sukhoi, it resembles old Brewster SB2A. Plane has radial engine, long wing (47 ft. 2 in.) with slight dihedral and even taper on both edges. Aft of cockpit canopy is a large turret (*below*).



## YAK-4



**YAK-4** failed as attack bomber, is now used for reconnaissance. Plane resembles Pe-2 (*opposite*), but is smaller and has a shorter nose.





**CLEAN LINES** mark the graceful attack bomber Pe-2, designed by Petlyakov. Unlike the twin-engine attack planes in USAAF, Pe-2 has low wing, inline engines in underslung nacelles. Fuselage is long and

slender, comes to a point aft. The twin fins and rudders are rounded, narrower at the top than at the bottom. Nacelles project beyond trailing edge. Taper and dihedral are marked on the outboard panels only.



**POINTED NOSE** extending forward of spinners helps identify Pe-2. Wing has brakes for divebombing. Load of 2,200 lb. is carried mostly externally. Note the machine guns behind greenhouse and in the belly.



**WIDE FLAPS** and sharp dihedral of tailplane stand out in this view of a diving Pe-2. The fighter version, Pe-3 (also known as Pe-2B) has a solid nose in which possibly four 12.7-mm. machine guns are mounted.



SB-3



**INLINE ENGINES**, bulbous nose mark SB-3, newest and most important of the SB medium bomber series which first saw service in Spain. Note stabilizer extending far forward, curved cutout in eleva-

tor. Turret atop fuselage has either two 7.6's or single 12.7-mm. weapon. Wingspan is nearly 67 ft., length is 41 ft. Top speed is 275 m.p.h., ceiling between 26,000-27,000 ft. The SB-3 carries a crew of three.

**SOVIET HEAVYWEIGHT** is the huge TB-7, used as a long-range bomber and as a transport. Huge wing has 131-ft. 2-in. span, only 10 ft. less than B-29. Length is 73 ft., 10 in. Designed by Tupolev, TB-7 was developed from TB's 3 and 6. Four 1,200-hp. inlines comprise power plant.

TB-7

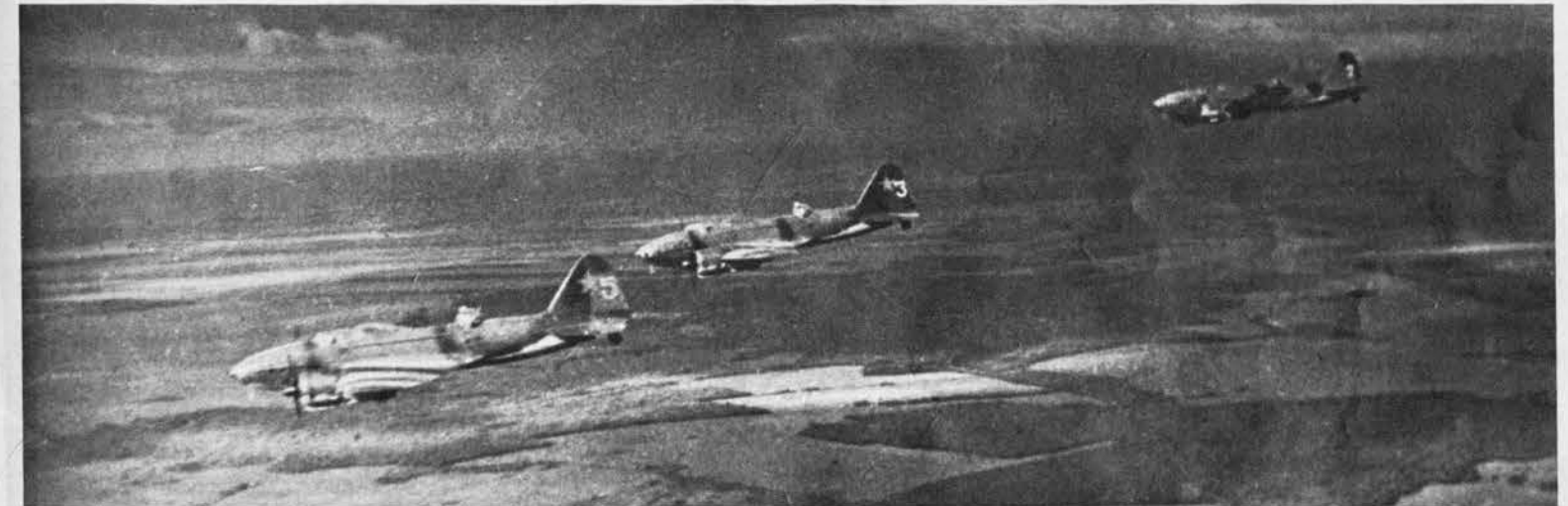


DB-3F



**DB-3F** is Russia's finest medium bomber with long range, good armament, high speed. It was the first Soviet plane to bomb Berlin. Recognition features include radial engines, pointed nose, turret with

12.7-mm. MG halfway between cockpit and fin. Taper of wing's leading edge is slight, that of trailing edge more evident. Slight dihedral is apparent only on outboard panels. Span is 70 ft., 2 in.; length, 47 ft., 7 in.

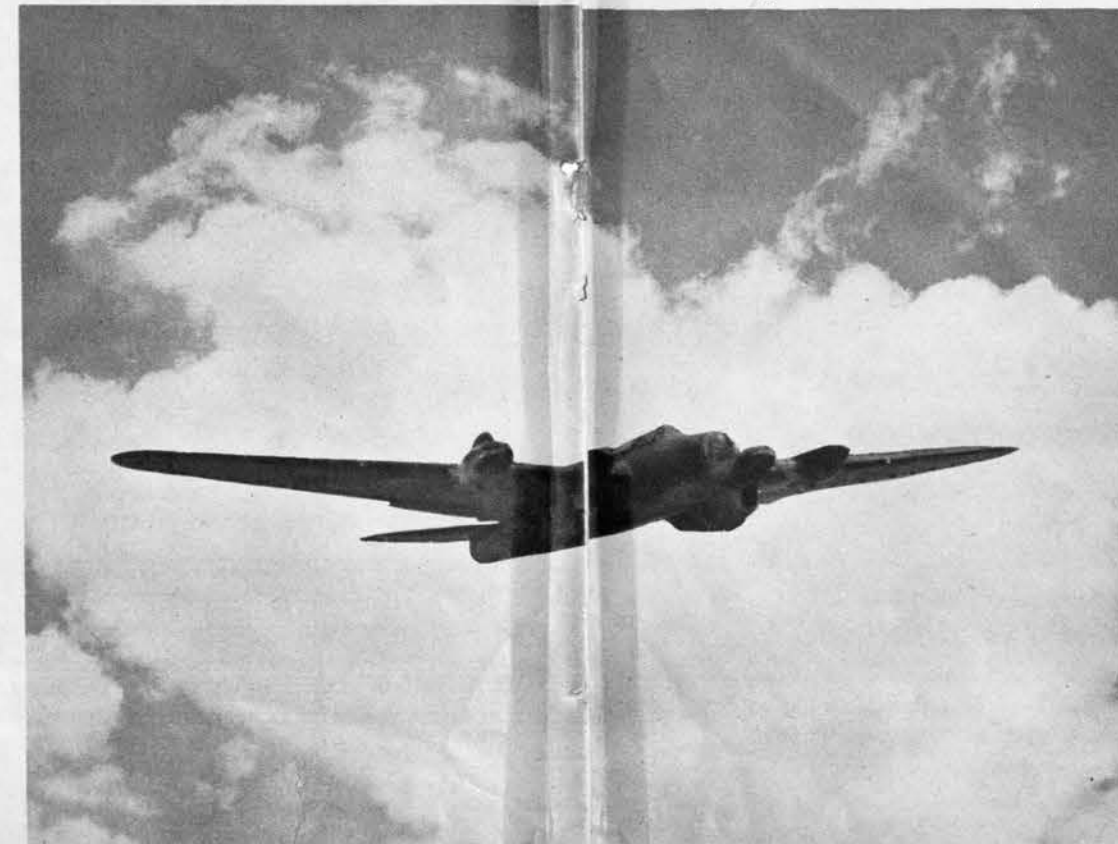


**TRIANGULAR FIN AND RUDDER**, pointed tail of this Ilyushin design show resemblance to Il-2 (pp. 34-35). DB-3F has done excellent work against railway junctions behind front, is also used for recon-

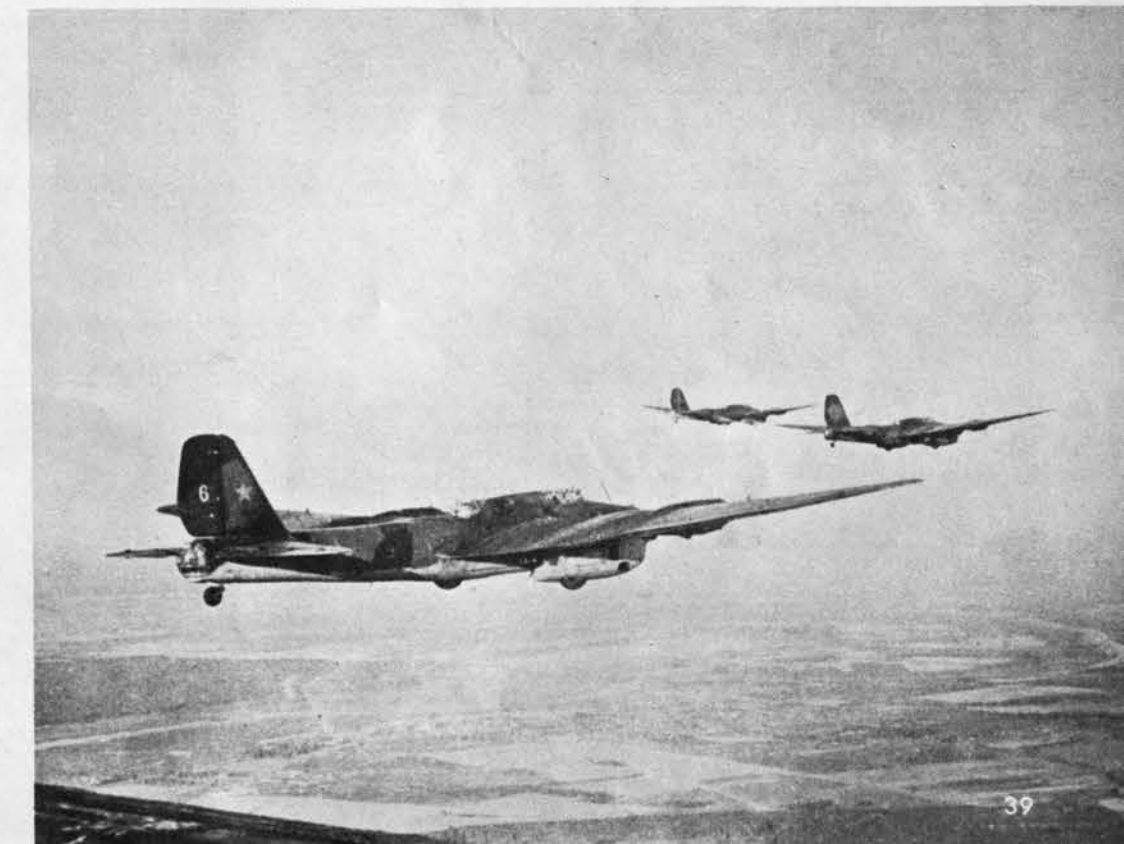
naissance and torpedo-carrying. Besides weapon in dorsal turret it has 12.7-mm. guns in nose and belly position. DB-3F was developed from DB-3, is similar except for pointed nose which replaced rounded one.

than on trailing edge, shows dihedral outboard of inside engine. Plane has greenhouse as well as nose turret, glassed-in bombardier's position.

**DOUBLE RADIATORS** under inboard nacelles cool both inboard and outboard engines on TB-7. The wing has more taper on leading



**TAIL TURRET** with 20-mm. cannon is directly under tall straight rudder. Large angular fin forms sharp angle as it fairs into fuselage. The TB-7's dorsal turret has 20-mm. cannon, while 12.7-mm. machine guns are mounted in unusual position at rear of inboard nacelles.





# THEY FOUND A TERUTSUKI

Nearly 85 per cent of what we know about our enemy is obtained through photo-reconnaissance. On enemy fronts fast, unarmed, unescorted planes sweep daily over enemy territory at low and high altitude, return with detailed picture coverage on fortifications, troop dispositions, matériel, and shipping. After careful study by photo-interpretation officers these pictures become the accurate intelligence that makes recognition and subsequent effective action possible.

In September, 1942 a Navy photographer flying in a B-24 made an overhead view of a new ship in Empress Augusta Bay. It was a powerful new unidentified destroyer, possibly one of the new Terutsuki Class.

The print was rushed to Washington. Working from their knowledge of Japanese warships and equipment (torpedo tubes, range-finders and gun platforms) Navy experts scaled the ship's length and beam. Shadows of the superstructure and deck gear gave clues to the height of turrets, bridge and other fittings.

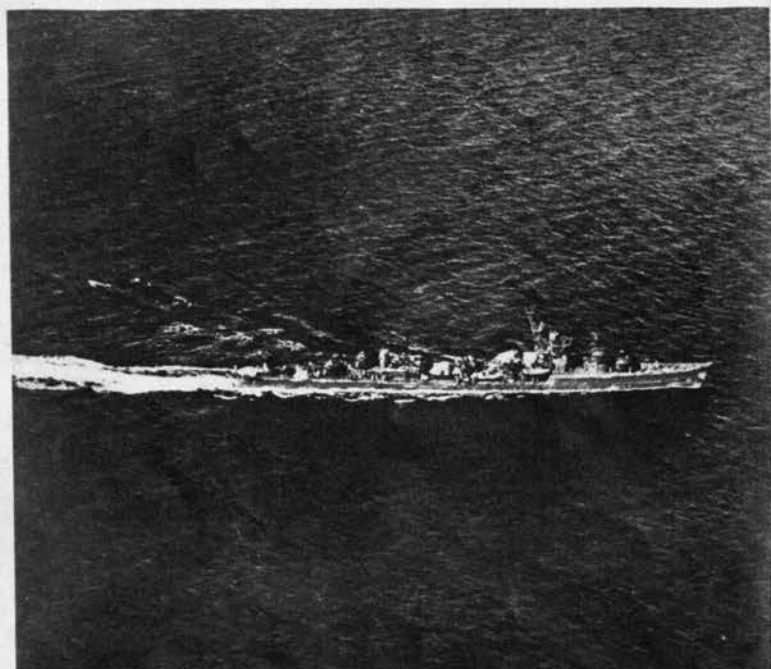
Three draftsmen then, independently, prepared plan and beam views which were finally resolved into a composite drawing. From this a model was made and photographed from all angles. These pictures were then reproduced and sent out to the fleet as part of ONI 41-42, Japanese Naval Vessels. How well these men have done their work may be seen by comparing the page from the manual with the recent photograph (*below*).



The original picture, photographed off Bougainville Island, proves to be the fast, heavily armed Terutsuki Class destroyer which had been reported in several earlier engagements.

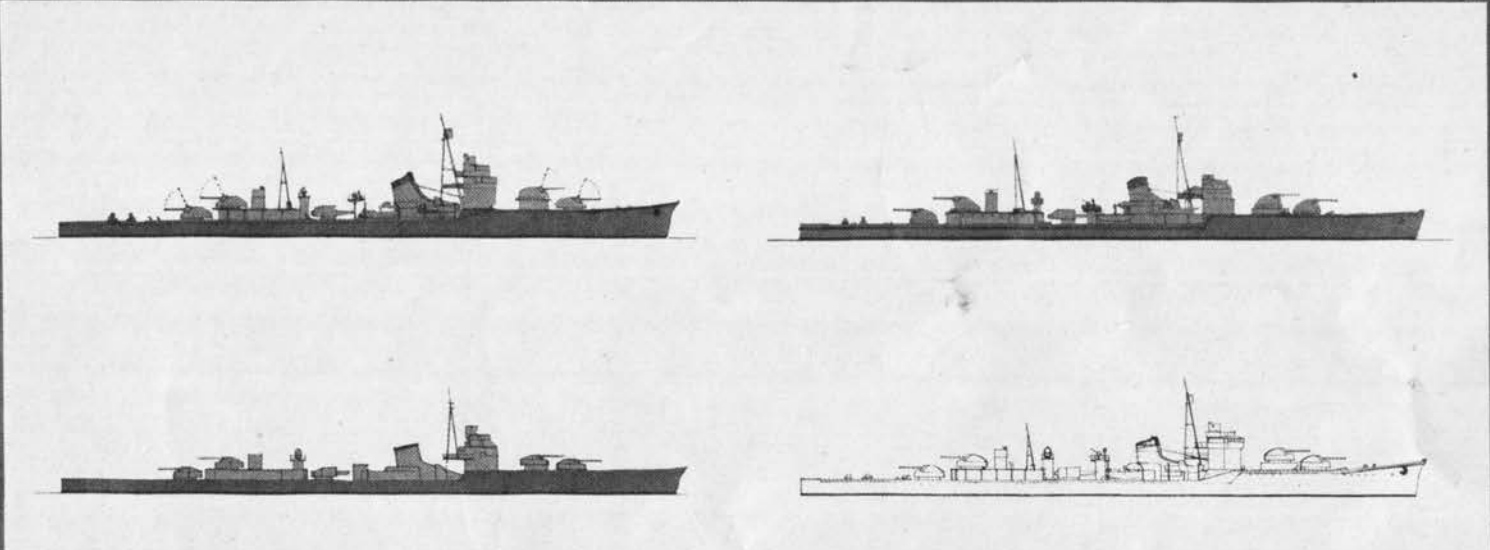


Skilled specialists at advanced air-base photographic laboratory studied recco shots, reconstructed details in report to Naval Intelligence.



Latest photograph proves the photo-interpreter's pudding. Note how closely actual ship resembles first rendered drawing (*opposite page*).



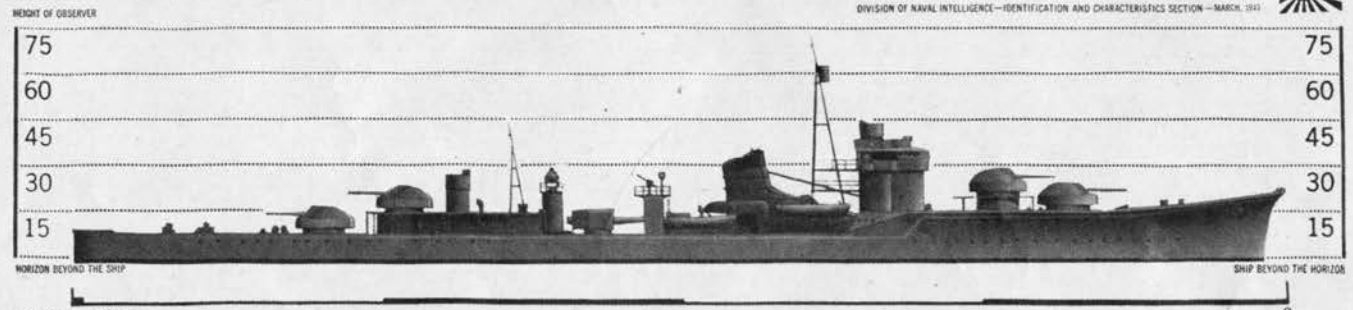


THREE PROCESSORS DREW THEIR VERSIONS OF DESTROYER (BLACK), FOURTH ARTIST DREW COMPOSITE (OUTLINE) FROM THEIR IMPRESSIONS

**ONI 41-42** RESTRICTED

**DD UN-1 CLASS\*** 

DIVISION OF NAVAL INTELLIGENCE—IDENTIFICATION AND CHARACTERISTICS SECTION—MARCH, 1943



LENGTH—405' OA  
BEAM—37'  
DRAFT—7'



DISPLACEMENT—2,300 TONS (STANDARD)

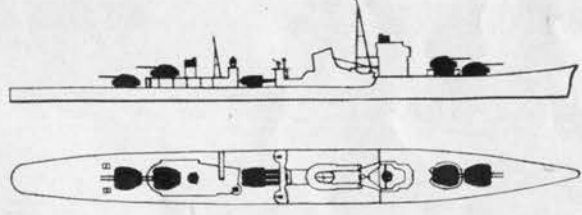
**ARMAMENT**

- 8-5" (50) DUAL PURPOSE TWINS
- ? SMALL AA GUNS
- 3-21" OR 24"5 TORPEDO TUBES
- ONE OR MORE SETS OF RELOADS

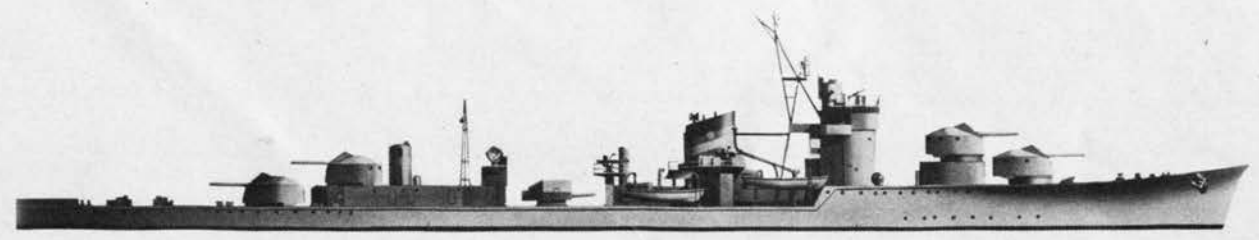
**PROPULSION**

- DESIGNED SPEED—34 KNOTS (E)
- THIS DATA ESTIMATED FROM PHOTOGRAPHIC MATERIAL AND DESIGN TRENDS.

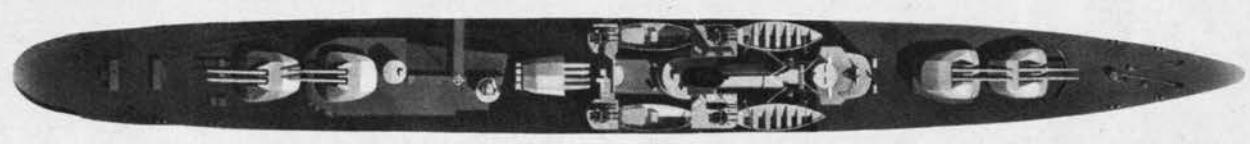
DESIGN AND ARMAMENT SUGGESTS ESCORT OR SCREENING DUTIES



FINAL DRAWING AND MODEL FOR RECOGNITION MANUAL IS MADE FROM FOURTH ARTIST'S COMPOSITE. SHIP WAS STILL KNOWN AS DD UNKNOWN 1

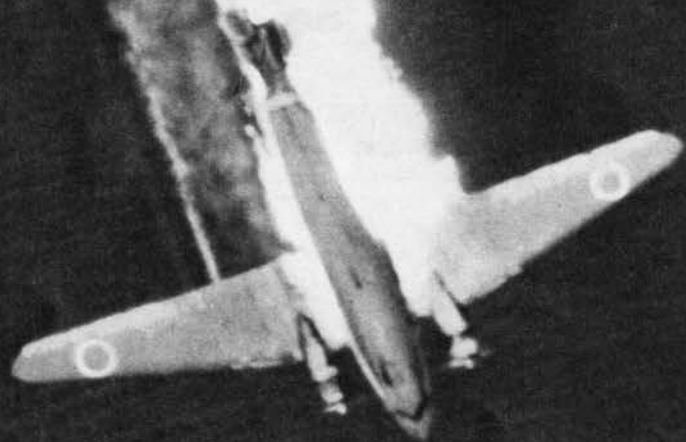


435' - O.A.



AS LATER INFORMATION AND PHOTOGRAPHS WERE UNCOVERED, THE NAVY REVISED ITS DRAWING. THESE WILL APPEAR IN REVISED MANUAL





Jap transport Tess plunges in flames to the sea. Characteristic Douglas wing of the Japanese-built DC-2 shows clearly





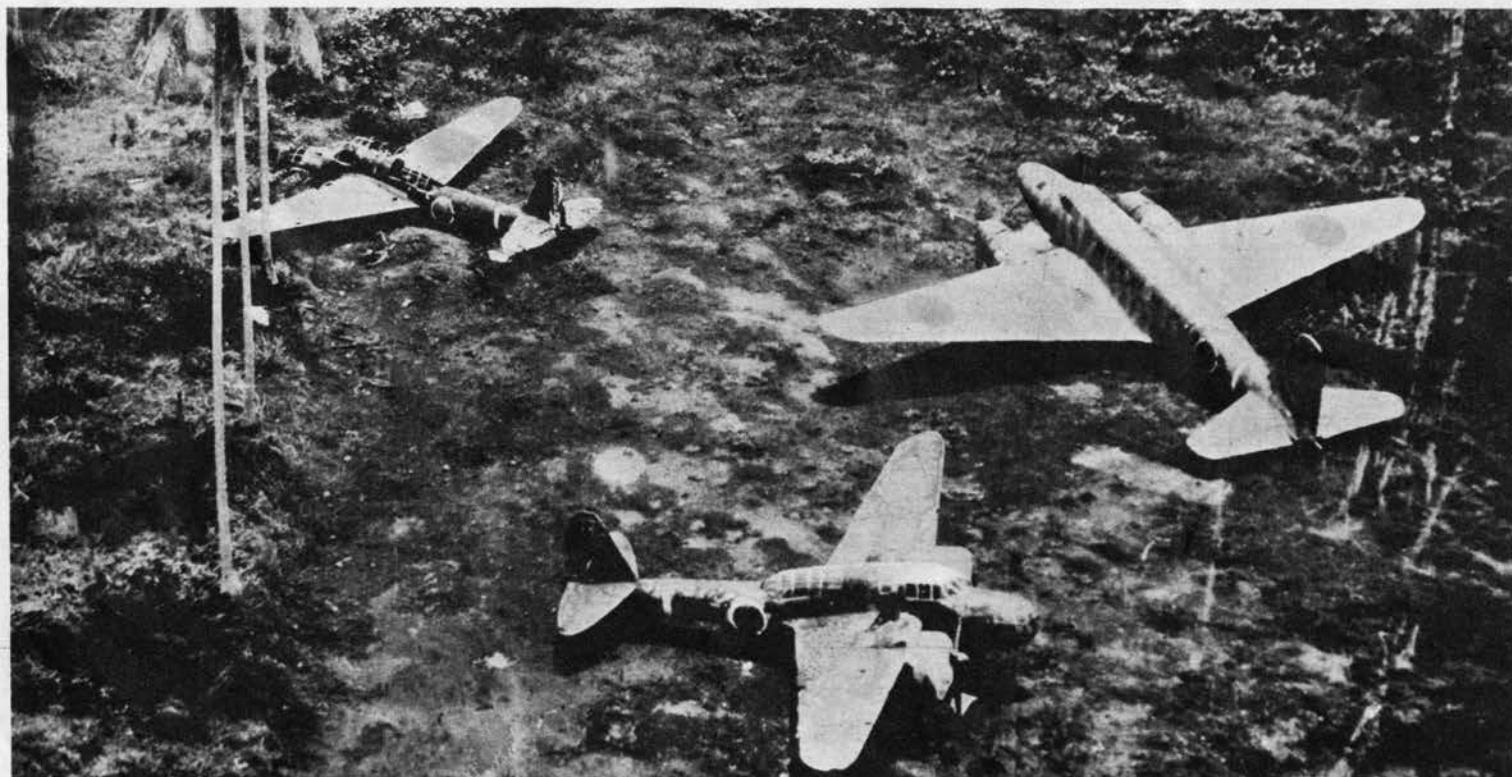
TOPSY RETRACTS LANDING GEAR AFTER TAKE-OFF. NOSE IS LONG AND ROUNDED, LOW WING HAS ROUNDED TIPS. TAPER ON WING EDGES IS EQUAL

## IMPORTANT JAP SECONDARY AIRCRAFT

In the May issue the *Journal* updated the first-line combat strength of Japan's air forces. Here, the story of our enemy in the Pacific air is rounded out by a brief survey of the transport and reconnaissance airplanes and obsolescent types that make up the Japs' second string of air support. Rarely seen thus far in the Pacific war, these aircraft may become more of a problem as U. S. pilots penetrate deeper and deeper into Japanese-held territory. As the current conflict draws near their homeland, the Japs may in desperation use these second-rate airplanes to plug

gaps punched in their top-flight line-up by American attacks.

Of these planes three transports are the toughest recognition problem. Topsy (*above and below right*) is an original Jap commercial design developed before the war and Tess (*opposite page*) is the Douglas DC-2, built in Japan under contract. Ancestor of the C-47, Tess has a narrower, flat-sided fuselage, blunter wing-tips, and an angular tailplane without the cutouts found on the U. S. transport. Tess's more angular fin has a straight, unfaired leading edge. Thelma, not shown here, is the familiar Lockheed 14.



VIEW OF DISPERSAL POINT REVEALS TWO LILYS AND A TOPSY (RIGHT). NOTE TOPSY'S DEEP TRIM FUSELAGE, CABIN WELL FORWARD OF WING





**Sonia**, old reconnaissance bomber, has fixed landing gear. Long greenhouse rises abruptly from fuselage. Bomb load is carried under wings.



**Sonia's** low wing has a moderate outboard dihedral, fillets and a sharp taper on the trailing edge. The tailplane, as well as the fin, is triangular.

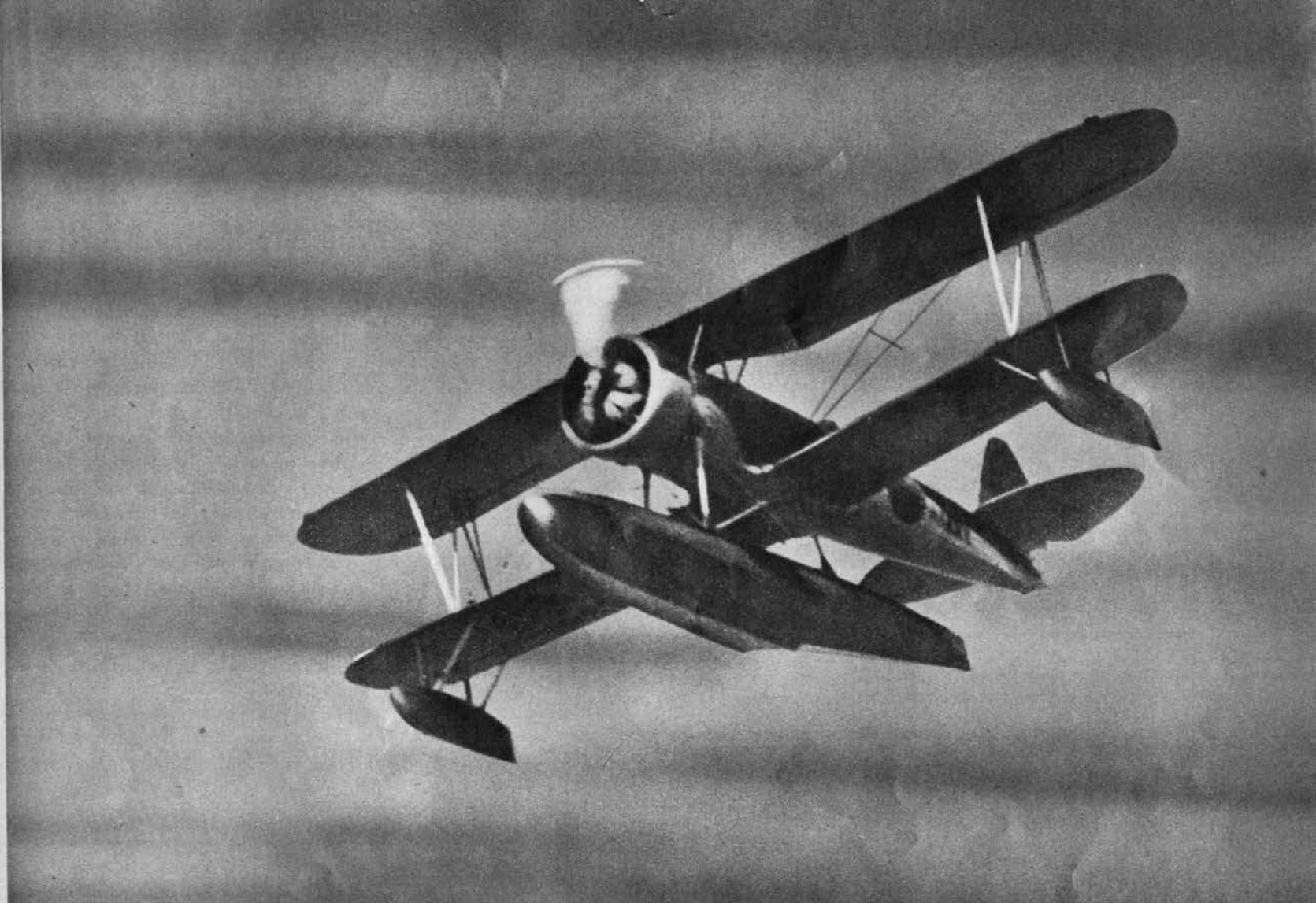


**Cherry**, twin-engine flying boat, has pointed hull, twin tail assembly crowning upswept stern. Fixed floats are mounted on parasol wing.



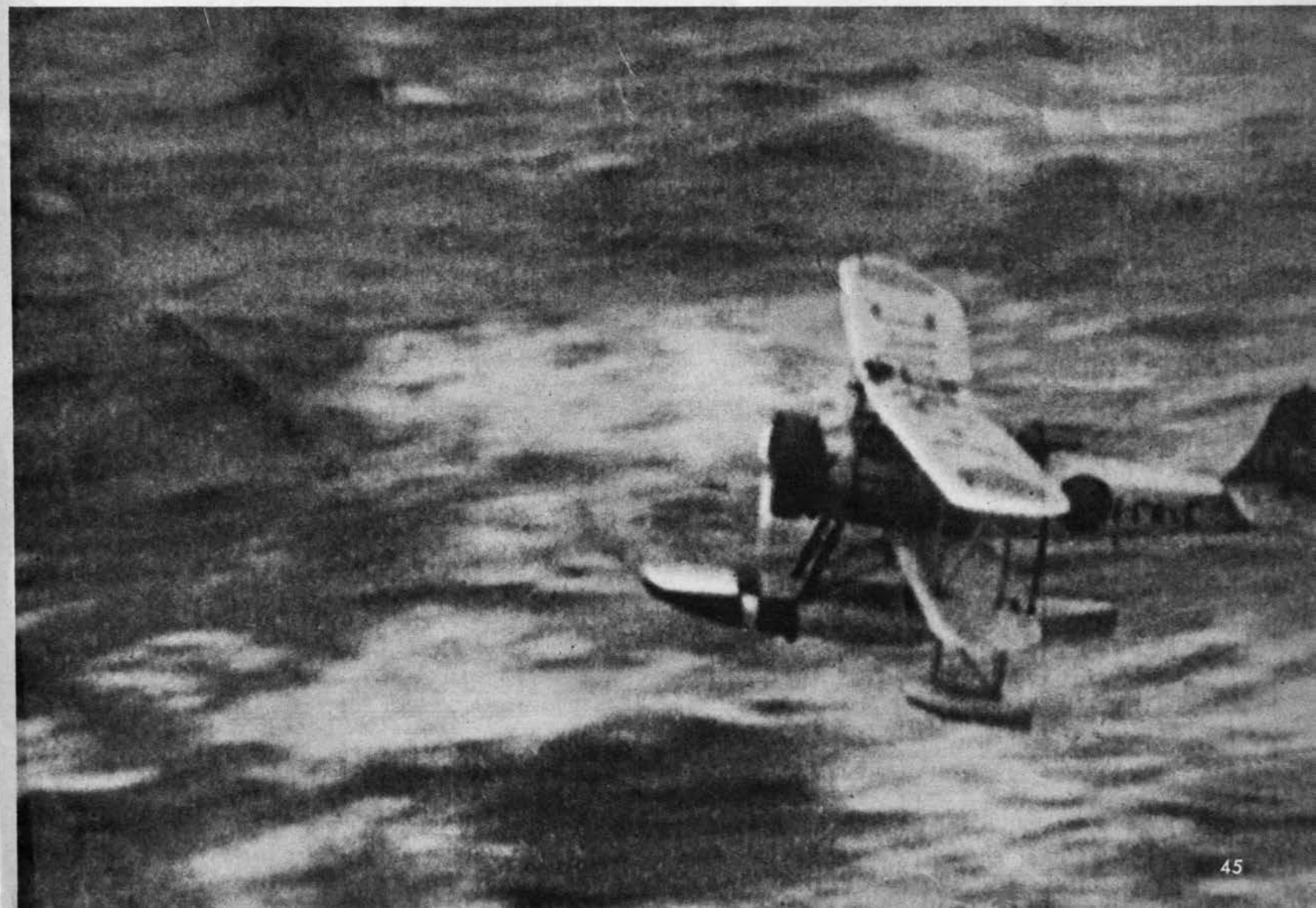
**Nate**, obsolete fighter, has an equally tapered low wing; fin is straight on leading edge, rudder is rounded on top. The undercarriage is fixed.





**Float biplane Dave** (*above, below*), used widely at the war's start for fighting and divebombing, now appears occasionally on reconnais-

sance. Wings are staggered, with the top wing swept back. Central float projects well beyond the nose. Above picture shows elliptical tailplane.



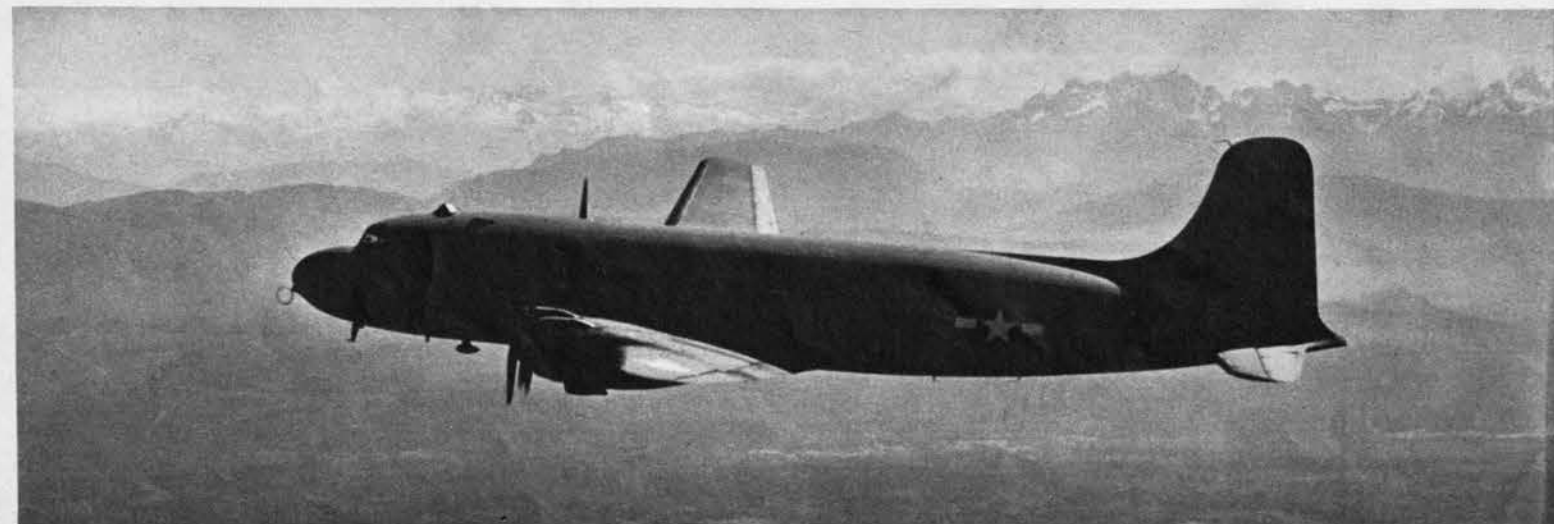




C-54'S NOSE PROJECTS WELL BEYOND EQUALLY TAPERED WING. TAILPLANE HAS ROUNDED TIPS



DIHEDRAL EXTENDING FROM ROOTS DISTINGUISHES C-54 HEAD-ON. NOTE CIRCULAR FUSELAGE



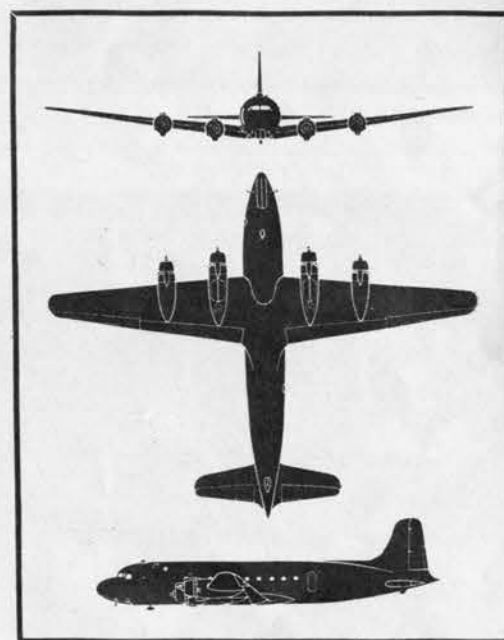
C-54'S DEEP FUSELAGE HAS STRAIGHT BACK AND BELLY LINES WELL AFT OF WING. FIN IS HIGH, ROUNDED, WITH CURVED EDGE FAIRING GRADUALLY

# SKYMASTER VS. KURIER

## Douglas transport differs

In the Atlantic approaches to Britain three months ago, a tragic mistake in recognition grimly underlined the importance of telling our C-54 Skymaster from the German FW-200. Protecting their convoy from a supposed FW-200 patrol bomber, a group of carrier-based British fighters attacked a Skymaster and sent the huge American transport, its crew of six men, and valuable cargo into the sea.

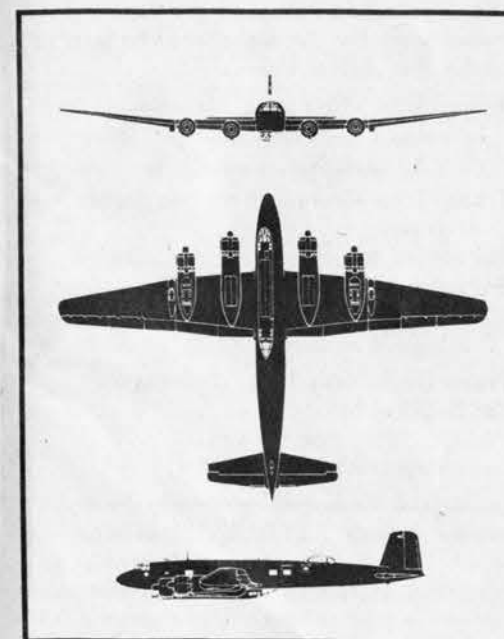
From certain angles the two four-motor airplanes superficially resemble each other, but basically, the C-54 and FW-200 are very different. The Skymaster is a decidedly bigger airplane, with 15 ft. more length than the 78-ft. Kurier, and a span of 117 ft. compared to the German's 108 ft. Though smoothly circular, the C-54's fuselage is broad and deep to accommodate loads of troops, tanks and bulky ma-



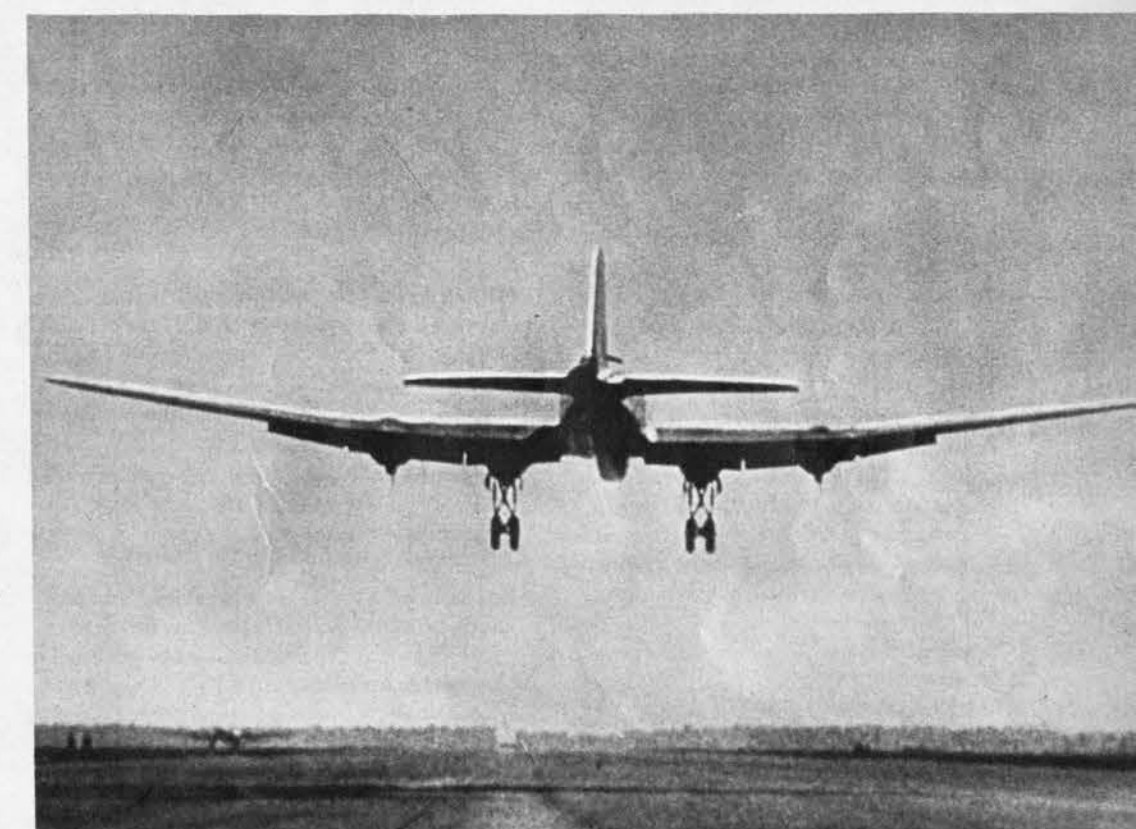
## from Luftwaffe's FW-200

chinery. The Nazi bomber was converted from the famous Condor transport, but it has a typically German fuselage, long and thin. In contrast to the C-54's round sleek lines, the Kurier is trim and narrow in outline, with two dorsal gun blisters and a long bomb bay added.

Wing shapes of the two airplanes are unfortunately somewhat the same, but minor differences can be seen in the silhouettes below. Equal taper to rounded tips characterizes the Skymaster wing, while the German's wing is uneven in outline. Perhaps the most obvious difference between the C-54 and the FW-200 is former's graceful fin and rudder. It is high, narrowing, with a curved, gradual sweep forward where it fairs into the fuselage. The Kurier's fin is wide and angular, with a straight, sloping unfaired leading edge.



FW-200'S UNDERSIDE IS FLAT, WITH LONG OFF-CENTER BOMB BAY. TAILPLANE IS SQUARED OFF



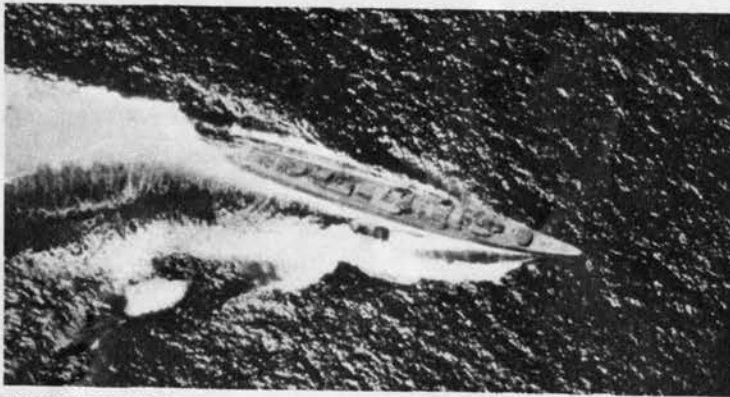
REAR VIEW OF KURIER REVEALS BOMB BAY, DIHEDRAL OF WING BEYOND OUTBOARD NACELLES



FW-200'S DORSAL LINE IS A SMOOTH CURVE BROKEN BY GUN BLISTERS ATOP CABIN AND AFT OF THE WING. WIDE, SQUARISH FIN RISES ABRUPTLY



# NEWS & MISCELLANY



TAKANAMI CLASS, NEW JAP DD, HAS ONE TURRET FORWARD, TWO AFT



MODERN CONTROL TOWER REPLACES CAGE MAINMAST OF COLORADO

## NEWS

Latest Jap destroyer (picture above, left) is the Takanami Class, known also as the Naganami. Developed from the Asashio Class, the new DD closely follows the older design in appearance and performance. It is approximately 20 ft. longer, however, and displaces about 400 tons more than the Asashio. Main battery armament is similar, but Takanami Class carries more AA, part of it on a new platform forward of the bridge. The Takanami bears some resemblance to the most recent reconstruction of the U. S. Porter Class DD.

The following statistics have been estimated from photographs:

Completed: 1942-44.

Length overall: 382 ft.

Beam: 34 ft.

Displacement (standard): 1,900 tons.

Armament: Six 5-in. 50-cal. twin mounts; four 25-mm. AA guns; one twin mount in gun platform forward of bridge; two single mounts, one either side of second stack; eight 24-in. torpedo tubes in quadruple mounts.

Depth charges carried.

Speed: 35 knots.

Paravanes fitted.

Photographed at Truk, Japan's Minekaze Class DD showed considerable modification of the original design. Light AA weapons have been substituted for most of the torpedo tubes and half the main battery armament. These changes suggest that this Minekaze unit is being used as an escort

vessel rather than a fleet destroyer. Minekaze DD's are the oldest destroyer class in the Japanese Navy, and it is possible that many units are being rebuilt.

Revised statistics for the modified unit are estimated as follows:

Length overall: 336 ft. 6 in.

Beam: 29 ft. 3 in.

Displacement (standard): 1,215 tons.

Armament: Two 4.7-in. 45-cal. guns; eight 25-mm. AA guns in twin mounts; three probable 25-mm. AA guns in single mounts; one twin 21-in. torpedo tube mount.

Speed: 30 knots.

It has been previously reported that Zeke Mark II was sometimes fitted under each wing with a bomb rack carrying one 132-lb. bomb. A Zeke Mark I has been found with two bomb racks fitted under the fuselage.

There are indications that the armament of some Type 2 Tojos may include 25 or 30-mm. wing guns.

It has been known for some time that medium bomber Betty Type I is fitted with three different types of tail turret—conical, truncated, and fishmouth.

Exact fuel capacity of the twin-engine fighter Nick Type 2 has now been determined. The six fuel tanks are placed as follows: two on top of each other in the fuselage between front and rear cockpits, one in each wing inboard of the engine; and an auxiliary tank in the leading edge of each inner wing panel.

The German MG 151/20-mm. Mauser cannon is the best weapon of this caliber used by the Luftwaffe. Long a standard cannon armament on German aircraft, the Mauser weapon has been found mounted, one in each wing, on a Japanese Tony Type 3.

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## QUIZ ANSWERS

### QUIZ No. 1:

1. PBV
2. F4U
3. Me-410
4. Beaufort
5. Go-242
6. Val
7. B-26
8. He-111
9. TBF
10. Ar-196
11. PBM-3
12. Nick

### QUIZ No. 2:

1. U.S. M-4 Mediums
2. Nazi PzKw Mk. IV
3. Nazi PzKw Mk. VI Tiger
4. Nazi 8-wheeled Armored Cars

### QUIZ No. 3:

1. L to R: Agano CL; Jap DD, possibly Asashio Class
2. L to R: Fletcher Class DD (3); Cleveland Class CL; Essex Class CV; Porter Class DD
3. L to R: North Carolina Class BB; Saratoga CV
4. L to R: South Dakota Class BB; Bonham - Sims Class DD; New Orleans Class CA
5. Front to Back: Atlanta Class CL; Porter Class DD (old rig); Benson-Livermore Class DD (3)

### QUIZ No. 4:

1. Ju-188
2. Jill
3. Spitfire XII
4. Mars
5. Jap Experimental 14
6. B-24H & J
7. Tojo
8. P-61
9. Judy
10. Boomerang
11. B-29
12. C-69
13. Albemarle
14. York
15. P-51D

## CREDITS

The pictures used in the *Journal*, unless otherwise specified (see below), came from the Allied Armed Services.

Cover—W. Eugene Smith—Ziff Davis Publications

2—Top left and fourth row cen., Frank Scherschel; Fourth row right, U.S. Marine Corps from Int.; Fifth row cen., W.W.

4—Bot., Frank Scherschel

5, 7—Top, J. R. Eyerman

12—Top right, Int.

16—Bot. right, Preslit

19—George Silk

20—Top, George Silk; Cen., William C. ShROUT

21—Top, U.S. Army Official Photo from Acme; Bot. left,

Elliot Elisofon; Bot. right, George Silk

22—Sovfoto

24—Bot., W. Eugene Smith—Ziff Davis Publications

25—Top, Myron H. Davis

29—Fourth row right, J. R. Eyerman; Fifth row right, A.P.

31—Bot., Sovfoto

33—Bot. left, Vladimir Musinov; Bot. right, Sovfoto

34, 35—Sovfoto

36—Top left, Sovfoto

37—Sovfoto

39—Top, Preslit—Sovfoto; Cen. and bot. right, Sovfoto

47—Top, Acme

Abbreviations: Int., International; W.W., Wide World



## HEAVY BOMBER



U.S.A.



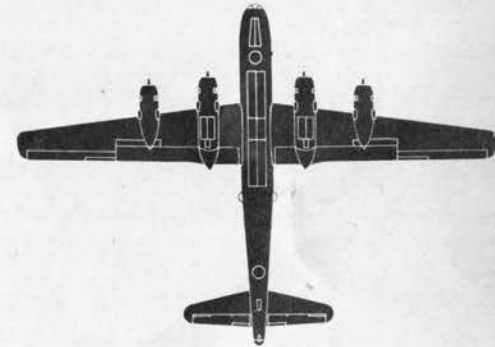
**DISTINGUISHING FEATURES:** Four-engine monoplane; a narrow midwing evenly tapered on leading edge, straight on trailing edge. Moderate dihedral extends from wing-roots to blunt wingtips. Inboard nacelles project slightly beyond trailing edge of the wing. Round fuselage tapers evenly from long, smooth nose to projecting tail-gun position. High fin and rudder, gradually fairing into the fuselage, suggests B-17. Tailplane, set high on the fuselage, has rounded tips, more pronounced taper on leading than on trailing edge.

**INTEREST:** With its tremendous range, speed and bomb load, the B-29, first of the "Superbombers", is expected to revolutionize strategic bombing. Its range will push the air front deep into untouched Axis territory, while its carrying capacity brings new and overwhelming pressure to nearer targets. Experience and progress brought about by the air war have been built into the new Superfortress. It is gracefully streamlined without the cluttered look of older bombers which had countless improvements hung on their basic designs.

JUNE 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30  
NAVY DEPARTMENT BUAER 3

## B-29



SPAN: 141 ft., 3 in.  
LENGTH: 99 ft.  
APPROX. MAX. SPEED:  
SERVICE CEILING:

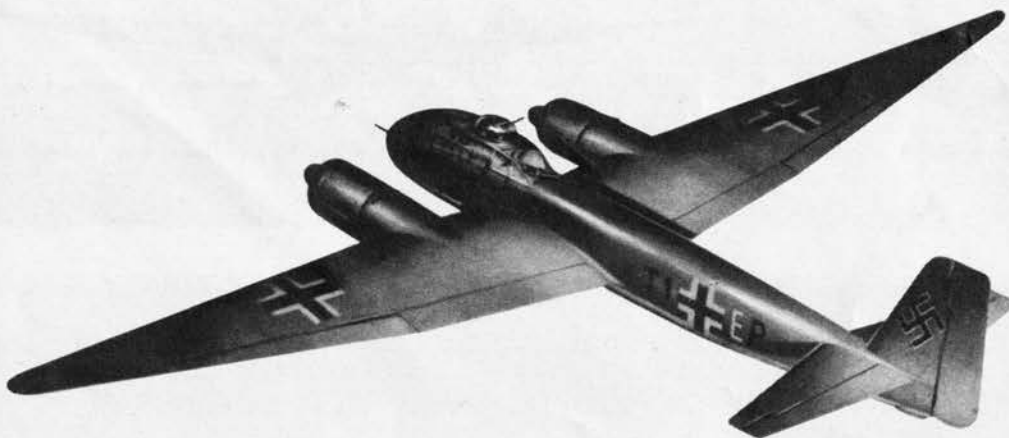
RESTRICTED

**NOTE:** This page is to be cut along dotted lines (above and below), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

## MEDIUM BOMBER



REICH



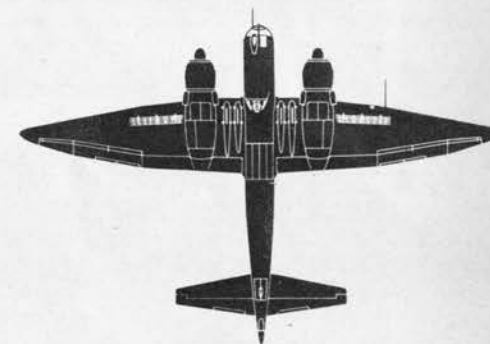
**DISTINGUISHING FEATURES:** Twin-engine monoplane has a midwing which looks low. It tapers unevenly on both edges to pointed tips. Pronounced dihedral extends evenly from the wing roots. Engine nacelles are underslung. Heavy, bulging nose at end of long thin fuselage is typically German, resembles Ju-88. Top and front of nose is a smooth glassed-in curve. Fin and rudder is high, squarish, with rudder extending down to underline of fuselage. Tailplane is set well forward, and its edges are equally tapered to square tips.

**INTEREST:** The Luftwaffe's latest medium bomber is a distinctly new development from the Ju-88, and not merely a sub-type. Speed and bomb load have been greatly increased, while the completely glassed-in nose provides more efficient gun positions as well as better visibility. Like most German aircraft, the Ju-188 is a general-purpose bomber, designed to carry various external loads for specialized jobs. Armament remains about equal to the guns on the Ju-88. Its peculiar wing position may cause confusion with Beaufighter.

JUNE 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30  
NAVY DEPARTMENT BUAER 3

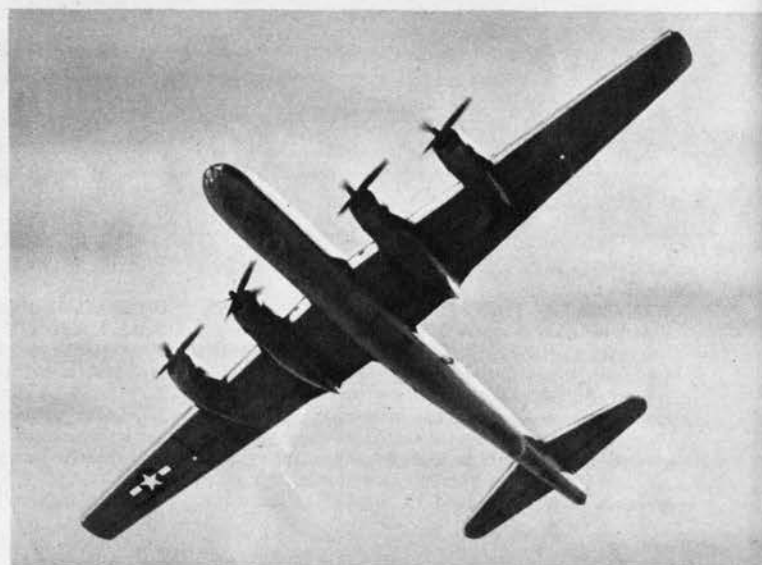
## JU-188



SPAN: 72 ft., 6 in.  
LENGTH: 49 ft.  
APPROX. MAX. SPEED: 325 m. p. h.  
SERVICE CEILING: 33,500 ft.

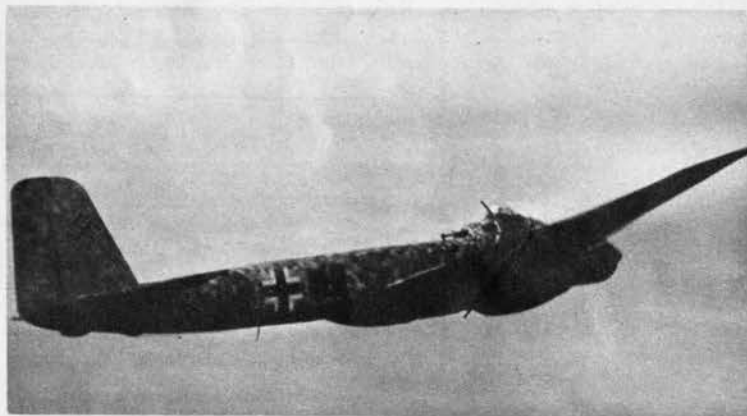
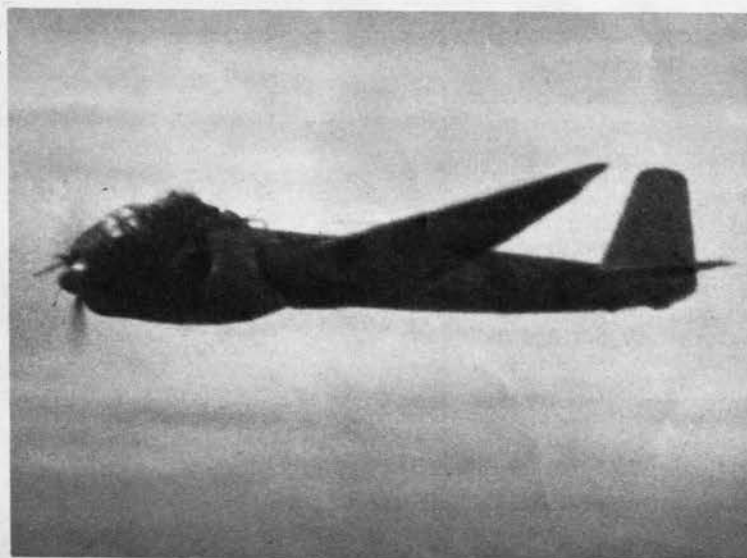
RESTRICTED



**A****B****C****D**

**THE B-29** is the long-awaited Boeing Superfortress. Only a few details of the superbomber's extraordinary performance can be revealed at the present time. Heavily armored and armed, it is the ideal plane for its first big job, bombing the Japanese homeland.

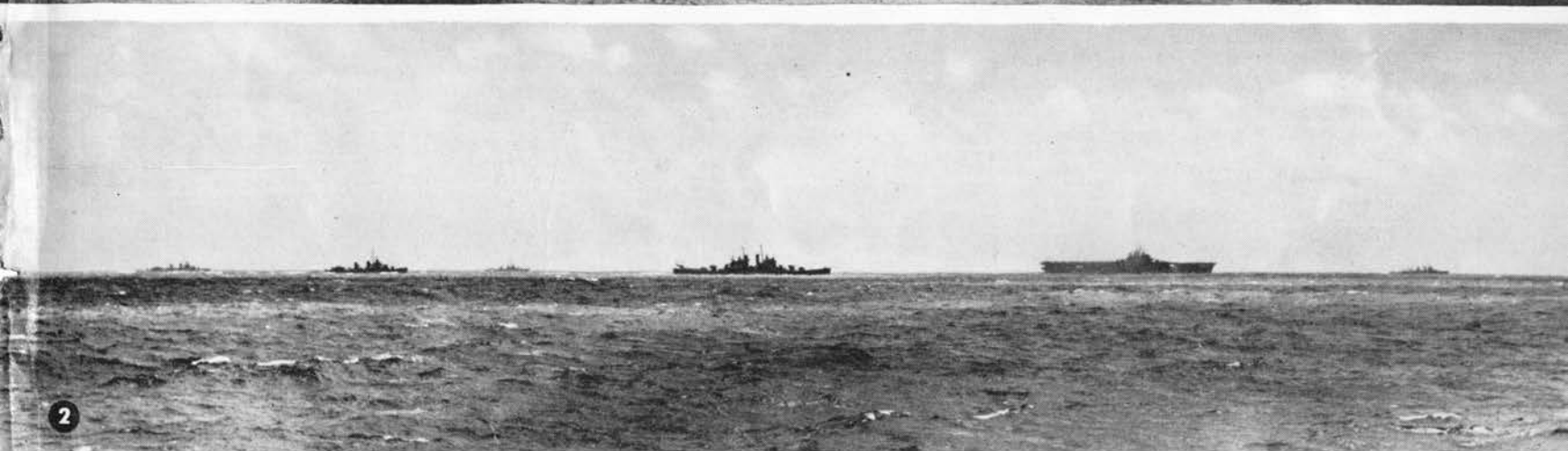
**THE JU-188**, latest addition to Luftwaffe's bomber force, is powered by two 1,750-hp. BMW-801 engines. Bomb load is 7,700 lb., most of which is carried externally. It is equipped with dive brakes, may carry either torpedoes or FX-type radio-controlled bombs.

**A****B****C****D**



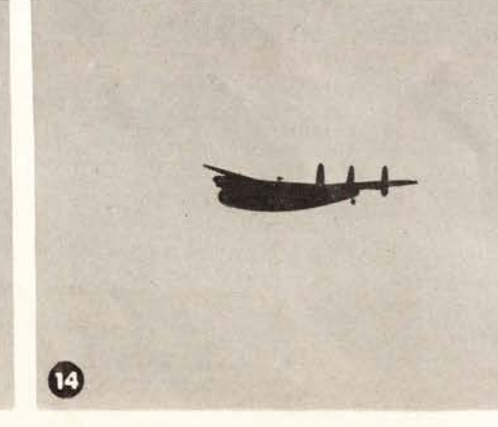
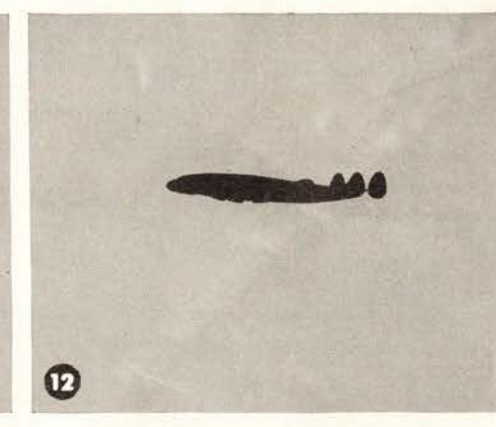
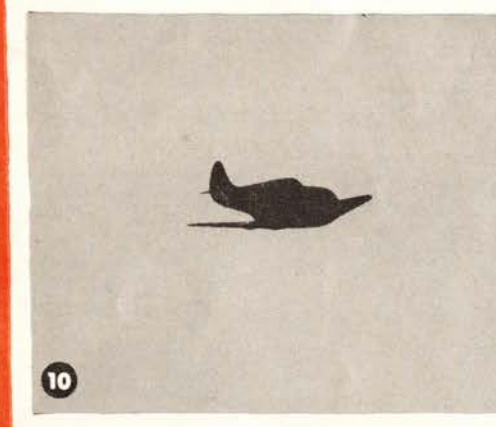
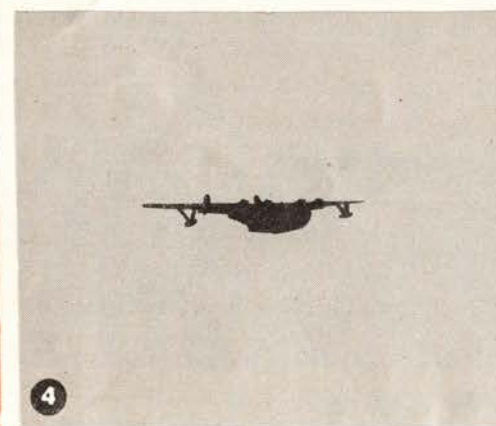
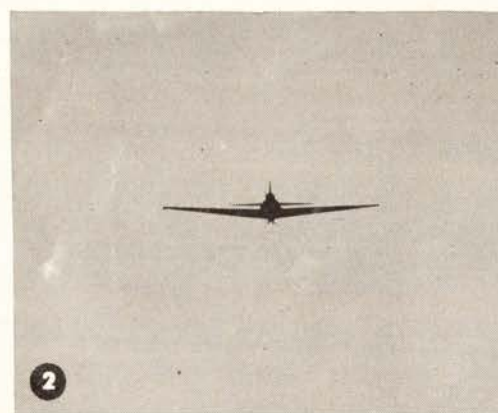
# QUIZ NO. 3: PACIFIC TASK FORCES

For answers, see p. 48





# QUIZ NO. 4: IMPORTANT NEW SILLOGRAPHS





# RECOGNITION

JOURNAL



**U.S.S. YORKTOWN**

~~RESTRICTED~~  
AUGUST, 1944  
NUMBER 12

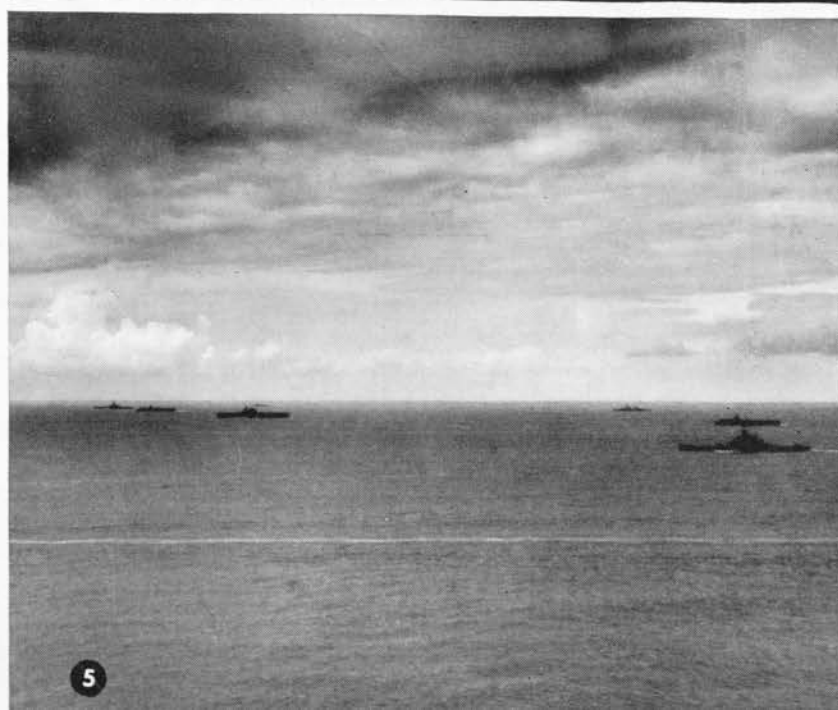
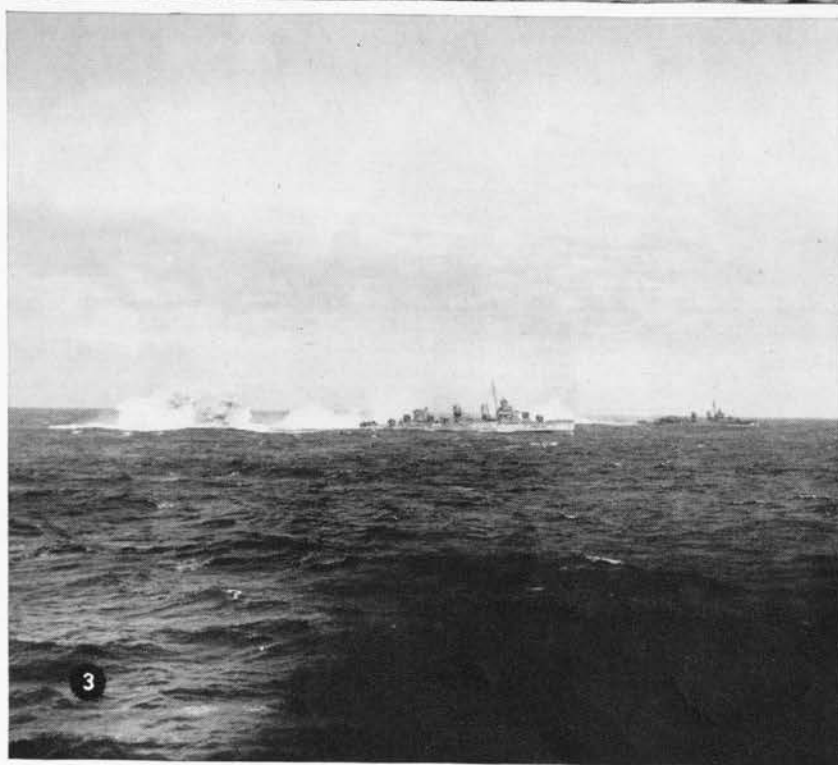
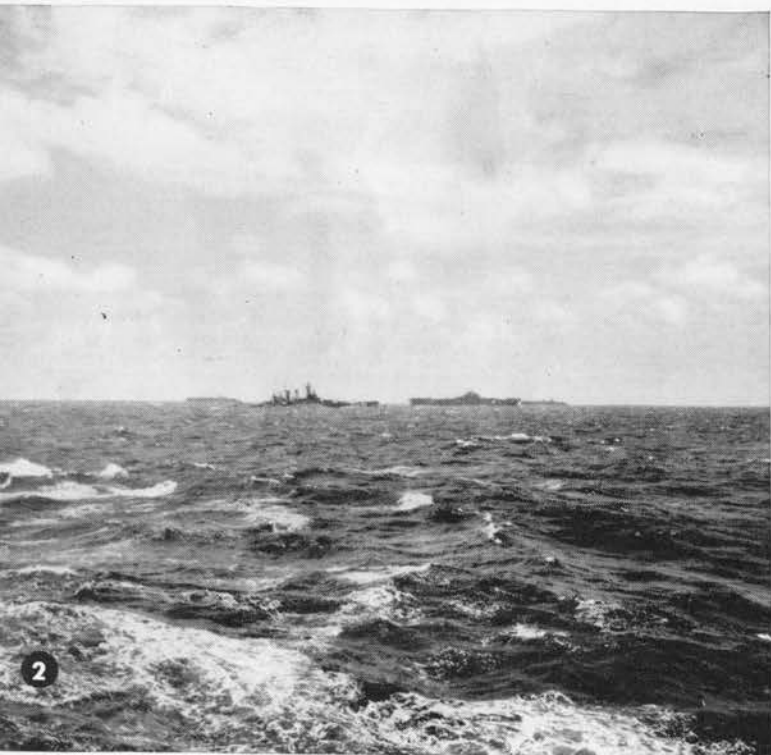
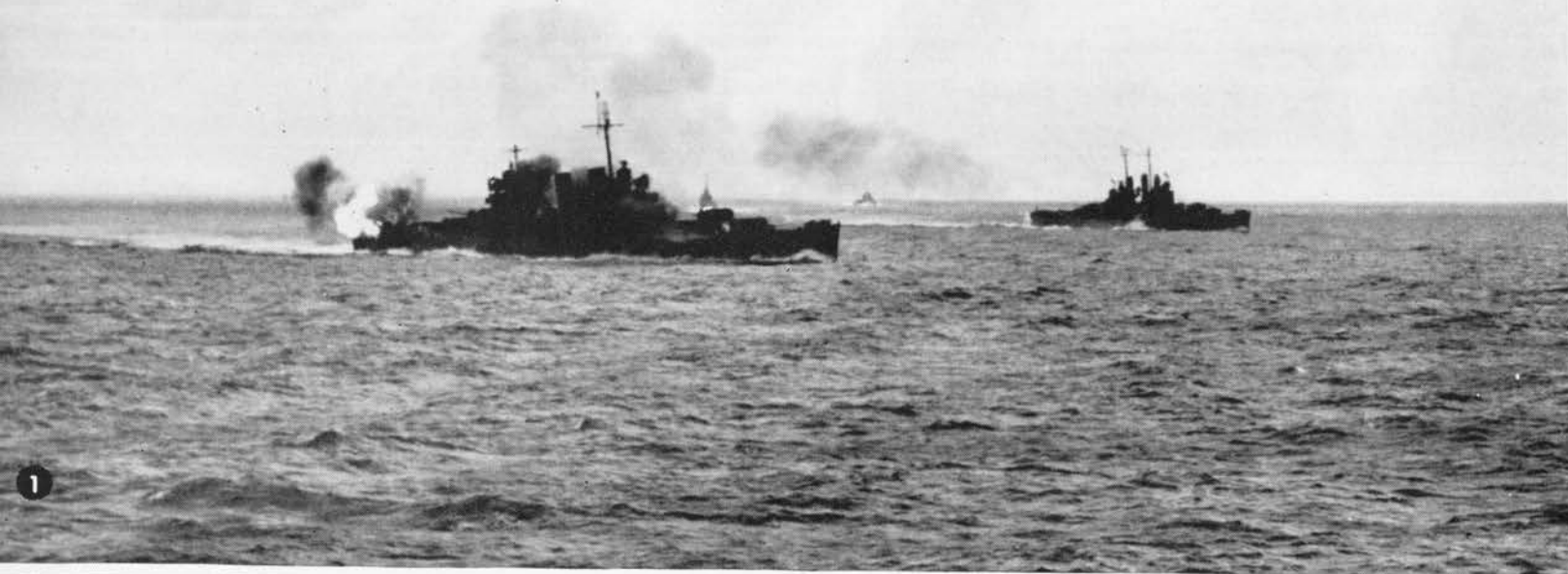
WAR DEPT.  
NAVY DEPT.





# QUIZ NO. 1: PACIFIC FLEETS IN ACTION

(For answers see p. 48)





# RECOGNITION

## JOURNAL

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IN A SWIRLING FIGHT U. S. PLANES AND PT'S STAGE A USELESS, FATAL BATTLE TO ENEMY'S ADVANTAGE

# IT COULD HAPPEN TO ANYBODY

The graphic picture above illustrates one of the most tragic examples of misrecognition on record. It is all the more tragic since it is merely an example: accidents like it still do occur when men do not know their recognition.

Some months ago in the Pacific, a B-25 pilot on patrol spotted two torpedo boats below him. Not recognizing them as U.S. Navy PT's he came down on them, strafing with his eight .50-

caliber machine guns. They, in turn, opened up on him. While the first PT was still sinking, a patrolling Navy fighter happened along, swung in on the bomber and shot it down. The bomber pilot never lived to make explanations, nor did all the PT men.

Such accidents can and do happen with incredible rapidity and without apparent reason. Only thorough knowledge of all the equipment in a theater will forestall such terrible instances.



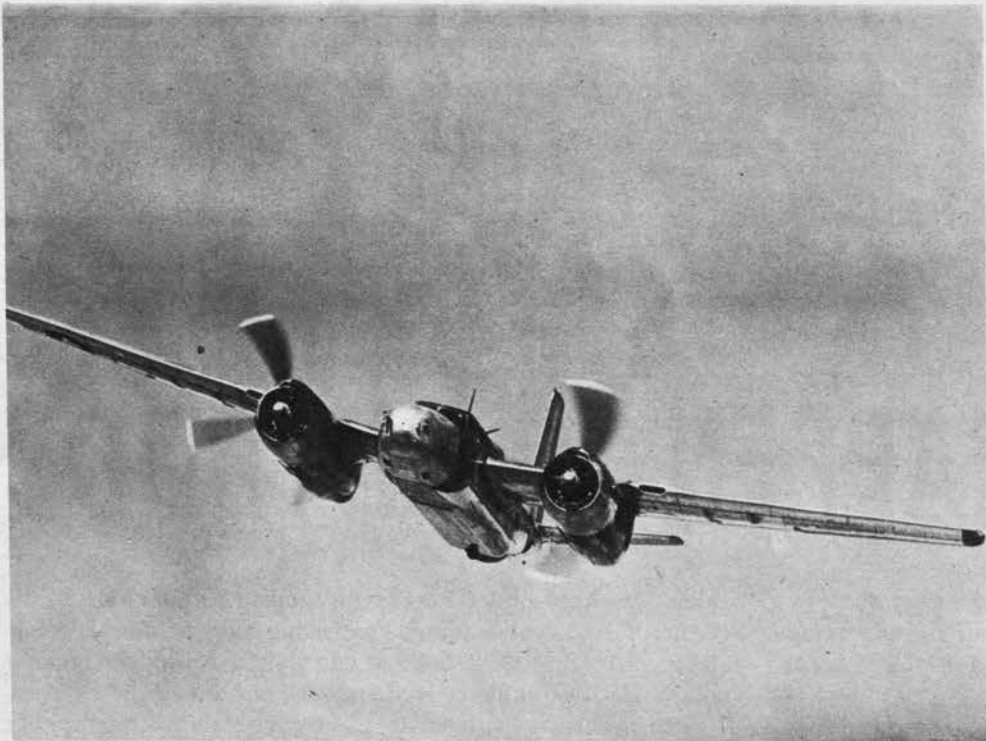


**Square edges of wings** and control surfaces give the A-26 a distinct personality from the A-20 Havoc. The remotely controlled turret in the belly breaks bottom line of fuselage.

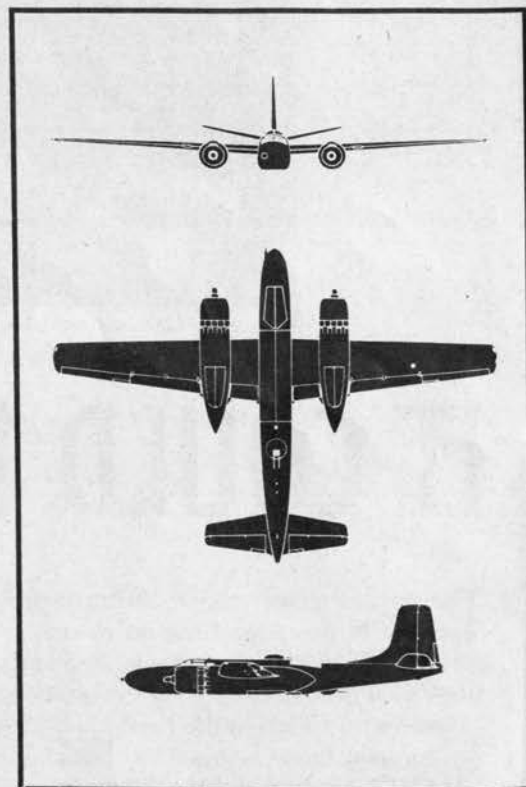
# NEW ATTACK PLANE: A-26

In the A-26, a new Douglas light bomber, the Army Air Forces are confident that they have the most versatile attack aircraft in the world. A big brother of the A-20, the A-26 more than duplicates its high performance. Though the A-20 was a fine horizontal, glide, skip and torpedo bomber as well as successful ground strafers and night-fighter, it could not be quickly adapted to the job at hand. Each change was almost a special modification. This difficulty has been overcome in the A-26. The Invader, as it is tentatively called, is equipped with several all-purpose noses. These vary from lightly armed plastic nose for the bomber version to an attack nose that is so thoroughly gunned that it makes the A-26 one of the most heavily armed aircraft in the world. The A-26 can be used as a horizontal bomber, a close-support plane or an antishipping weapon. Though its normal bomb load is 1,200 lb., it can carry up to two tons.

Recognition-wise, the A-26 has a clear family resemblance to A-20 but it differs in many details. The tall fin is square cut. The bottom of the fuselage is almost flat. The outsize nacelles which house the 2,000-hp. engines extend well forward and aft of the square-tipped wing. The after-section of the fuselage is thinner and less upswept. The wing and tailplane have nearly equal taper on both edges to square tips.



**Coming at you** the Invader looks square and boxy. This model carries an attack nose. The tall fin and dihedral tailplane resemble A-20's but the flat broad fuselage is unique.







**Huge square tail** dominates the A-26's appearance in most views, and is its chief identifying characteristic. The airplane's Pratt & Whit-

ney R-2800 engines are mounted in long nacelles which stretch over a third the length of the fuselage. They drive the A-26 at over 300 m.p.h.



**Bomber version** has clear plexiglass nose but it is recognitionally similar to the attack types. On all versions, two built-in turrets give

ample side and rear fields of fire, make the plane as strong defensively as offensively. They are mounted in the belly and atop the fuselage.





THIS SLEEK NEW FIGHTER, THE JET-PROPELLED P-59A, IS THE LATEST DEVELOPMENT IN THE CONSTANTLY EXPANDING SCHEME OF AERIAL WARFARE

## JET POWER IS LATEST DEVELOPMENT IN ARMY FIGHTERS

On these pages the *Journal* presents first pictures of the Allies' most publicized secret weapon, the jet-propelled airplane. With this fighter, the Bell P-59A, the most striking development in airplane propulsion since the invention of the airscrew finds a practical application.

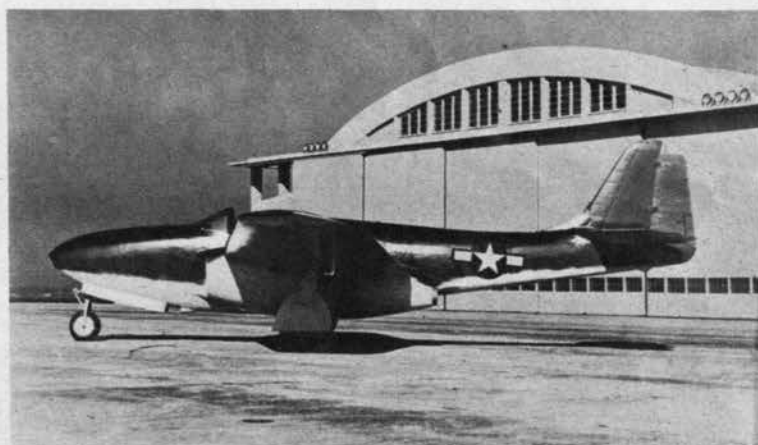
As used in the P-59A, jet power has not radically altered the appearance of airplanes. The P-59A looks like a very sleek, twin-engine, midwing monoplane. The nacelles which house the units are moved in to nestle against the fuselage so that head-on the plane has a very broad, shallow body. But the main elements of

its construction—wing, fuselage and tail—retain the relationship found in more conventional aircraft.

These factors are important in recognizing the P-59A as an individual airplane but are not positive marks of jet power. To make this new form of power available as quickly as possible, standard design and manufacturing techniques had to be adhered to. But in the future, not only will propellers disappear, but the power units may be absorbed into wings and fuselage. The all-wing construction, to which jet power is beautifully adapted, may well become the dominant style. No man can fully conjecture the possibilities.

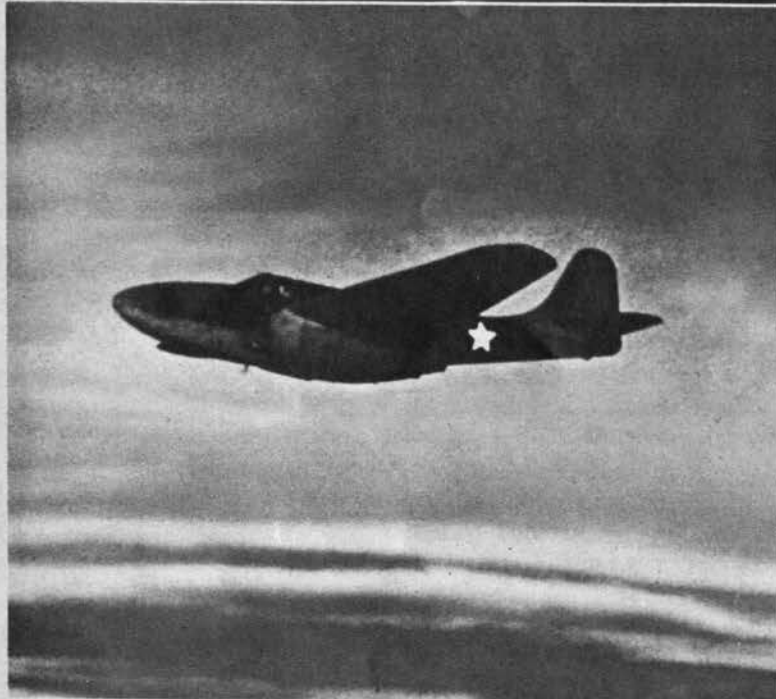
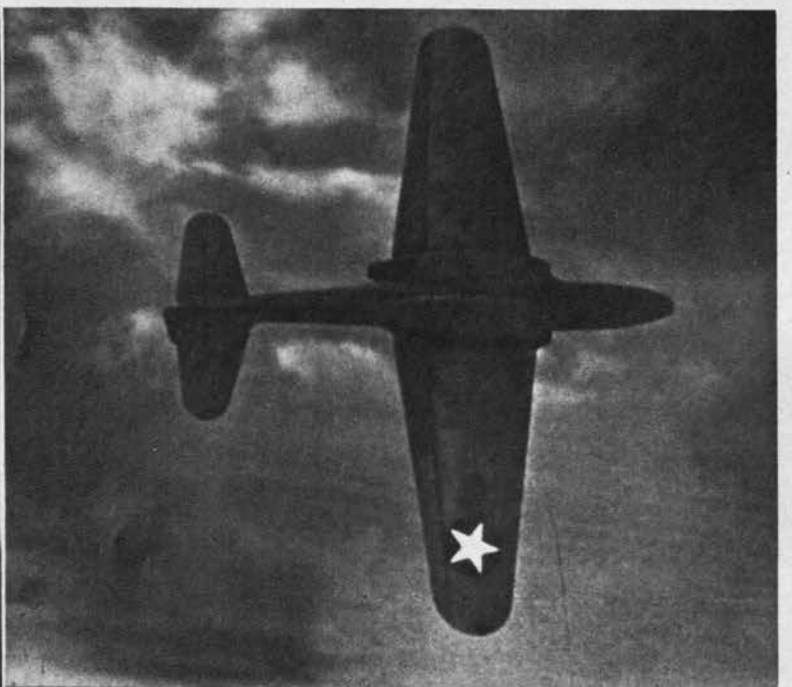


**Bulky jet units** are located beneath the P-59A's midwing, snug up against the fuselage. They give plane its distinctive broad, shallow fuselage which, when seen head-on, is its best recognition feature.



**P-59A's fuselage** shows typical Bell design in its long pointed nose, smoothly tapered tail. The cockpit is just forward of the wing's leading edge. Fin and rudder is almost identical with that of the Bell P-63.





**Action views from training film** show the P-59A in various flying attitudes. Notable recognition features are its long broad wing, slender profile, upswept tail, and two close-set power units. No actual per-

formance data can, of course, be released on the P-59A at the present time but because of its speed, its high rate of climb and the unusual nature of its power source, it has already been called the Airacomet.



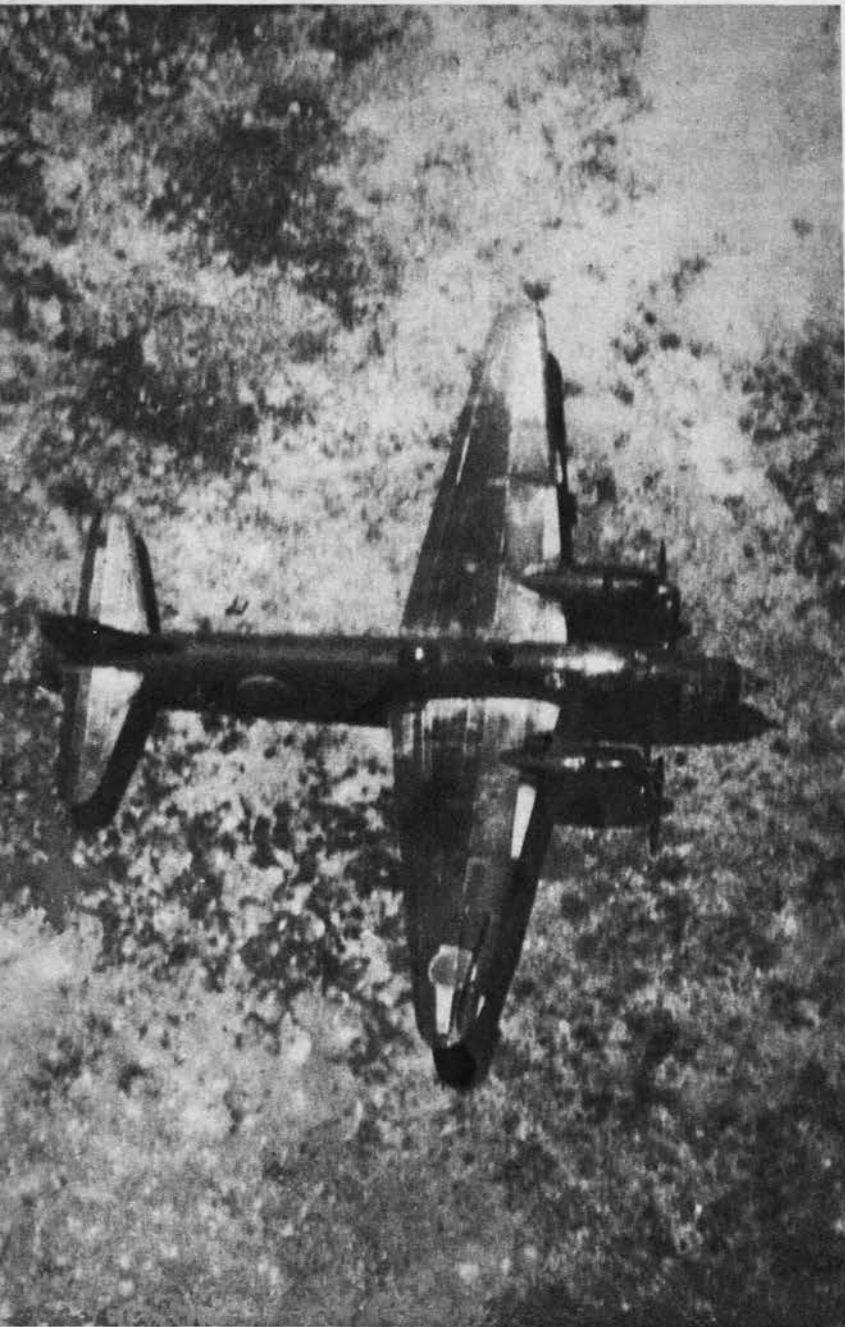
## RECENT DEVELOPMENTS IN THE JAPANESE AIR FORCES

Japan cannot by any means be counted out as a positive air threat despite her enormous losses in the Marianas campaign. In the eight months preceding May 1944, six new airplanes were introduced; since May two more have been positively identified and photographed. Still in the process of analysis by air intelligence officers in the field are several more airplanes which will be reported on in the *Journal* as soon as available material warrants. In addition, the Japanese have made important modifications on older models. On two of them, Betty and Lily, these changes have been radical enough to make the planes important new recognition problems.

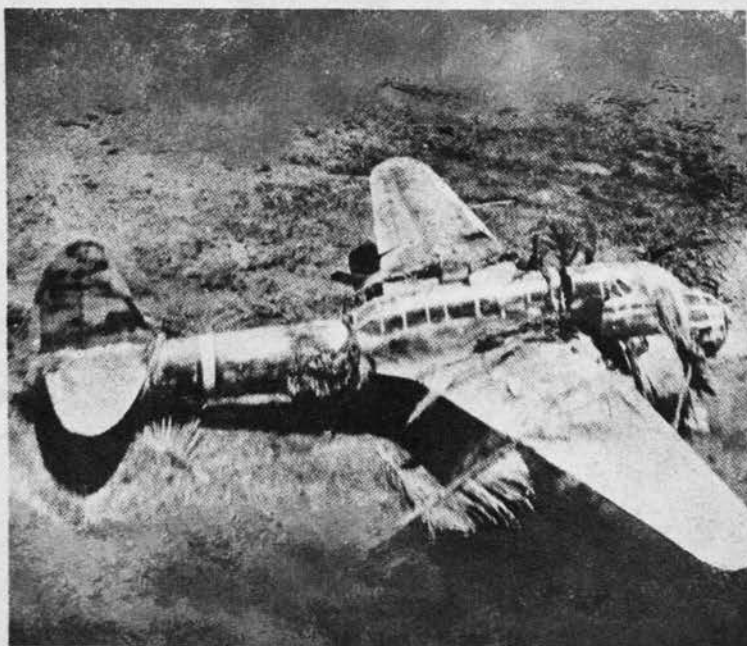
Of the changes, perhaps the most significant is the power turret atop the new Betty (*left*). This big bomber now has rounded tips on wing and tailplane, flush side openings in place of gun blisters and about twice as much glassed-in space in the nose. More glass is also to be found in the greenhouse of Lily (*lower left*). The transparent cover now extends from the pilot's windshield all the way to the rear of the cabin.

One of the two newcomers is Irving (*shown below*). So far it has served as a reconnaissance plane and has been adapted for nightfighter use. This is suggested by intelligence reports which indicate that the Japanese have a twin-engine fighter type in addition to Nick. The unidentified plane shown at right may be the Y-20 attack bomber. This aircraft bears a resemblance to Betty but due to its size has been mistaken for Irving. Chief differences between Irving and the possible Y-20 are in the tail, greenhouse and wing. Irving does not come to a point at the tail, and the rudder has a nearly vertical trailing edge. The trailing edge of the Y-20's rudder sweeps forward. The Y-20 does not have a prominent broken greenhouse, one of Irving's outstanding features. Irving's wing has moderate taper on the trailing edge, and the tips are raked. The Y-20's wing has almost equal taper on both leading and trailing edges and has blunt tips.

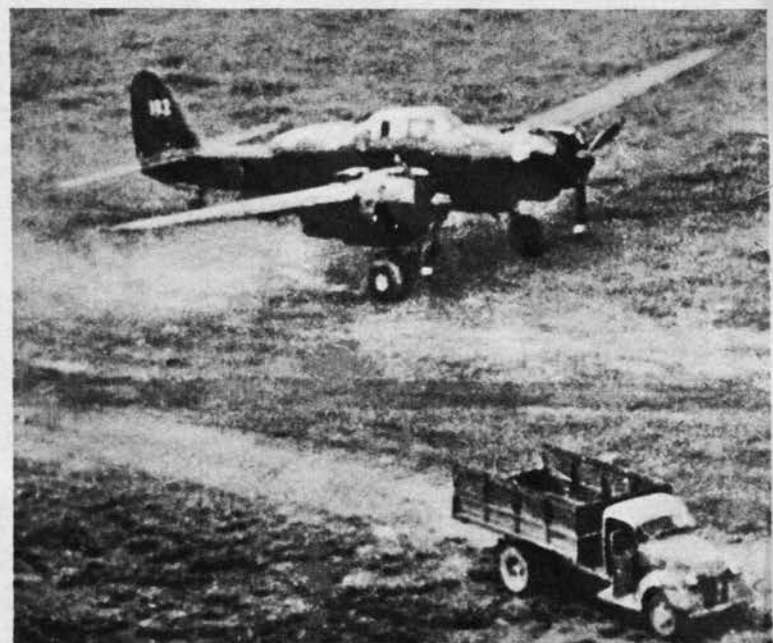
Although the Japanese have made no significant changes in Judy, we are printing two new pictures. They bring out its wing position, long cockpit cover and the details of the tail assembly.



**Streamlined Betty** no longer has gun blisters at the waist. Wingtips, formerly slightly raked, are now perfectly rounded. New power turret, possibly first on any Japanese plane, is over wing's trailing edge.



**New canopy** marks this Lily, Japanese light bomber and observation plane. The entire cockpit cover is now made of glass. Also visible in this view is the slender round rear section of the fuselage.



**Irving** is a low-wing monoplane with radial engines. Moderate dihedral stems from wing roots. Important for recognition is the prominent greenhouse with its unusual break behind pilot's section of cockpit.



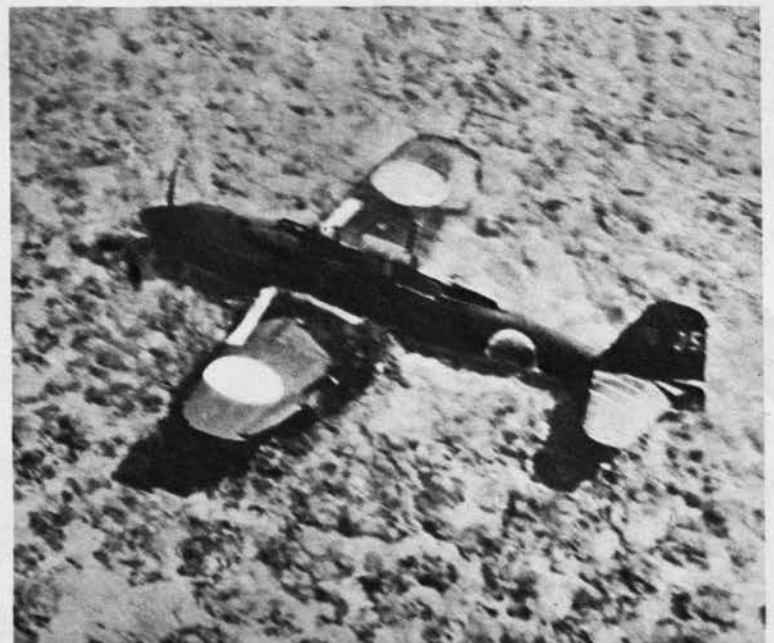


**Y-20** is the current designation for this fighter-bomber apparently designed to operate at extremely long range. The fuselage is long and slender. Broad wing tapers very slightly on the leading edge but shows

a pronounced taper on the trailing edge. The tailplane is wide with blunt tips. The fuselage seems to come to point at the rear much like Zeke and Kate. Details on its speed and armament are still unknown.



**Long nose** containing an inline engine helps identify Judy, carrier-based recco plane and divebomber. Water hides the prominent radiator below engine but helps bring out the position of Judy's midwing.



**Long cockpit canopy** and even taper of wing's edges can be seen in this plan view. Contrary to the impression given by first drawings, the fuselage projects very little beyond rudder's trailing edge.

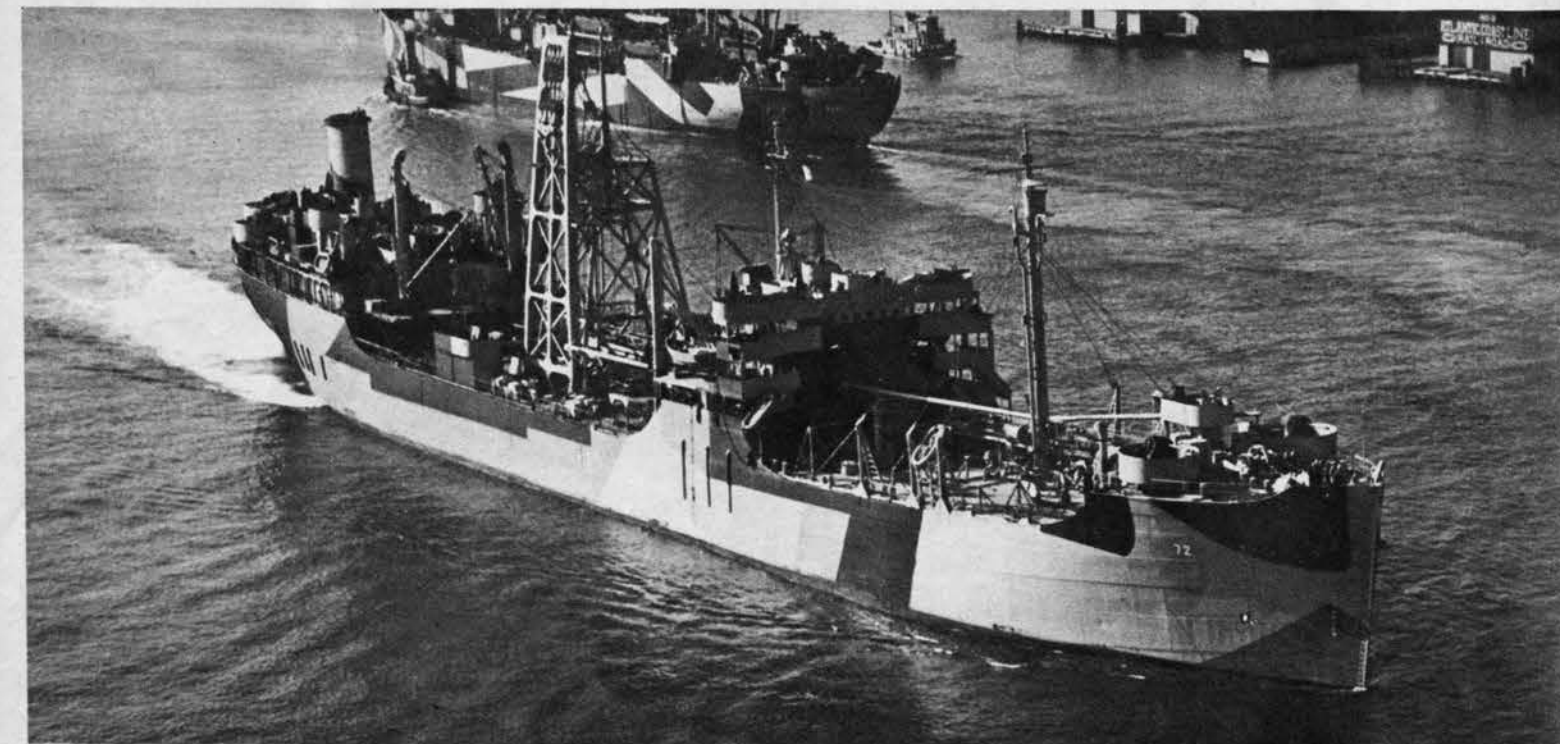


# NEW LANDING CRAFT AND AUXILIARY VESSELS SWELL OUR BEACHHEAD ASSAULT TEAM



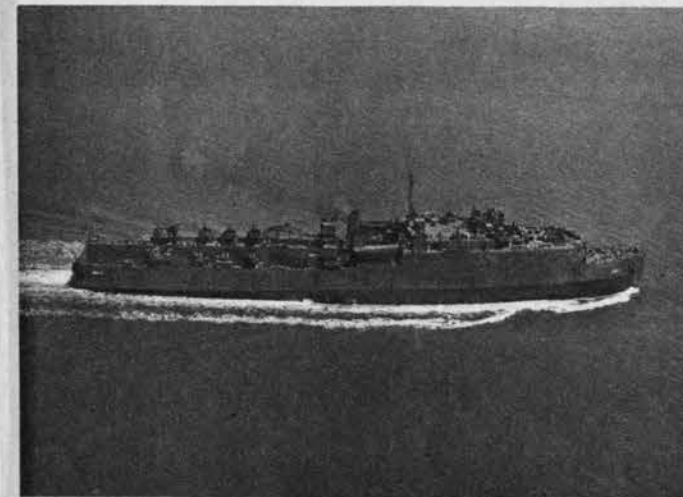
**Bases away from home** for our fleet are now outfitted with Navy's new floating dry docks. Shepherded by tugs, these mammoth structures are towed across the seas and are in operation almost before the

fighting ceases. At a quick glance, these dry docks might be mistaken for aircraft carriers, the well not being visible and the crane rising up like a tower bridge. Ship under repair is a new engines-aft cargo type.



**Auxiliary to invasion** is this newspecially fitted small tanker. Her individual feature is the great derrick mounted in the afterdeck well. This is used to facilitate handling of the small landing craft which

carry the troops from the transports to the beach. The ship can thus act both as a floating derrick and an auxiliary oiler since the added weight of the derrick does not offset the whole cargo-carrying capacity.



**Landing ship, dock (LSD)** grew out of a wedding of the LST and a floating drydock. They transport loaded landing craft to the beach, flood the hold, and the LC's move out under power.



**High deck forward** shelters crew of LSD on long ocean crossings or in heavy weather. Block superstructure forward, two small stacks port and starboard, deck well help identify type.



**Halfway step** between an LST and an LCT, the new LSM combines the best features of each. She is an ocean-going vessel with a long range and adequate carrying capacity but has greater speed than the lumbering older LST.



**Landing ship, medium (LSM)** is a large vessel roughly resembling the familiar LCI. Unlike the LCI, she does not have the troop gangways overhanging the hull. Instead she has an expansive well extend-

ing almost the full length of the ship. A high ramp which rises above her blunt bow in transit, is lowered at the beach to allow the vehicles to roll out under their own power, ready for immediate combat action.

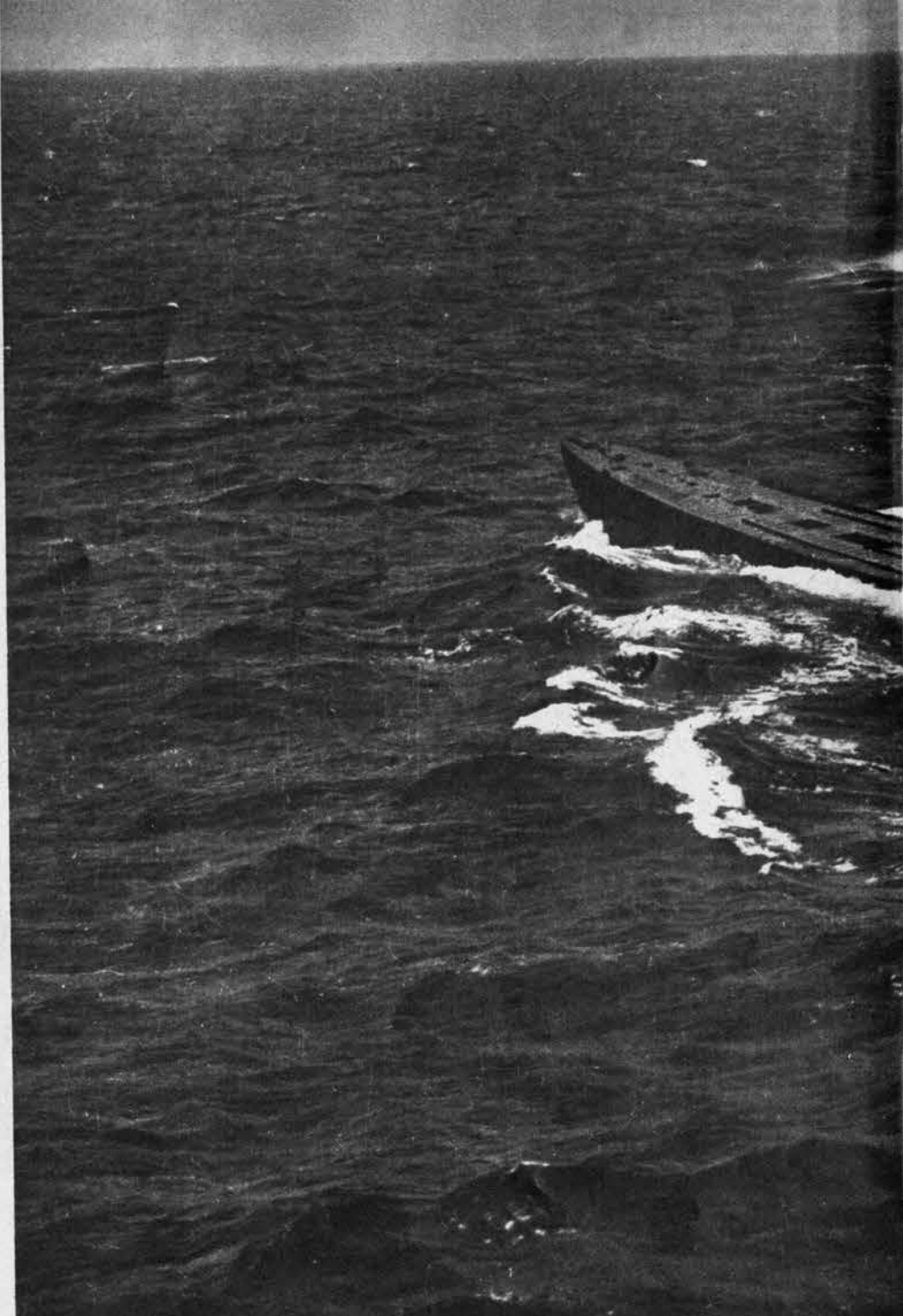


# SUB RECOGNITION IS DIFFICULT JOB

The greatest unlicked problem in the field of recognition is still the submarine. All navies and air forces operate under a policy of "if you see a sub sink it." Unless the position of friendly submarines is known exactly or unless they can identify themselves immediately, the patrol boat or plane has no recourse but to depth-charge or bomb.

Until precise methods of U-boat recognition can be devised, the best the *Journal* can do to point toward a solution is to print the finest photographs available. Certainly no better pictures of enemy underseas equipment have yet come our way than the photographs of the German submarine shown on these pages.

The focus of submarine recognition is the conning tower and armament disposition. Hull shapes vary with the size and purpose of the vessel and are not greatly affected by a nation's naval architecture. The U-boat shown on these pages is typical of most German construction. The conning tower has an upright leading edge with a slight overhang on the fairing. Two *Wintergarten*, or steps, which support 20-mm. or 37-mm. AA weapons, recede aft. The single main gun is sometimes mounted on a flush deck just forward of the tower. The periscopes are thin and inconspicuous. Most American subs have a long AA platform forward and aft of the bridge. They also have prominent periscope housings. But U. S. R-Class subs bear a dangerous similarity to craft pictured here.

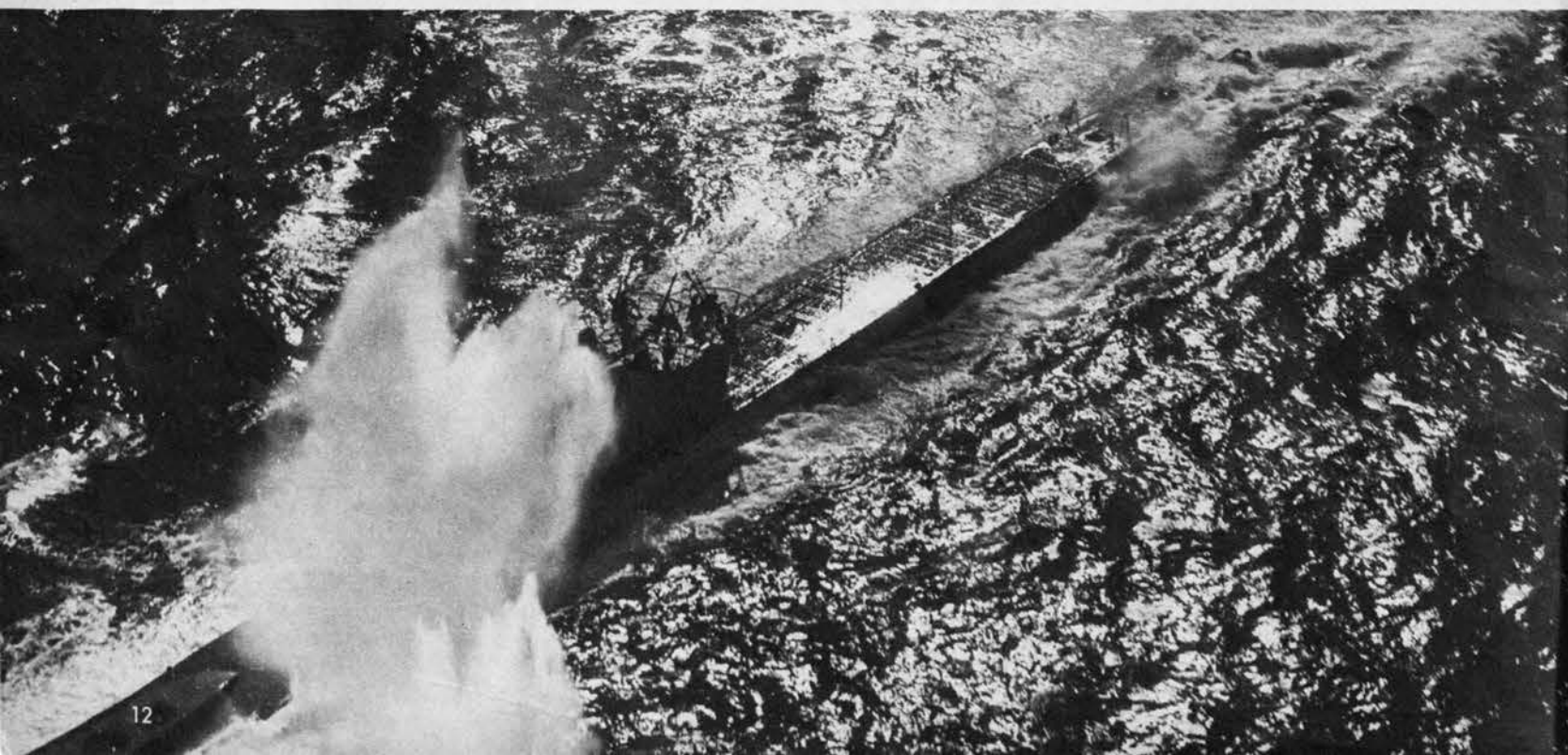


DEPTH-CHARGED, 1,200-TON GERMAN U-BOAT COMES TO SURFACE TO FIGHT WITH ATTACKING

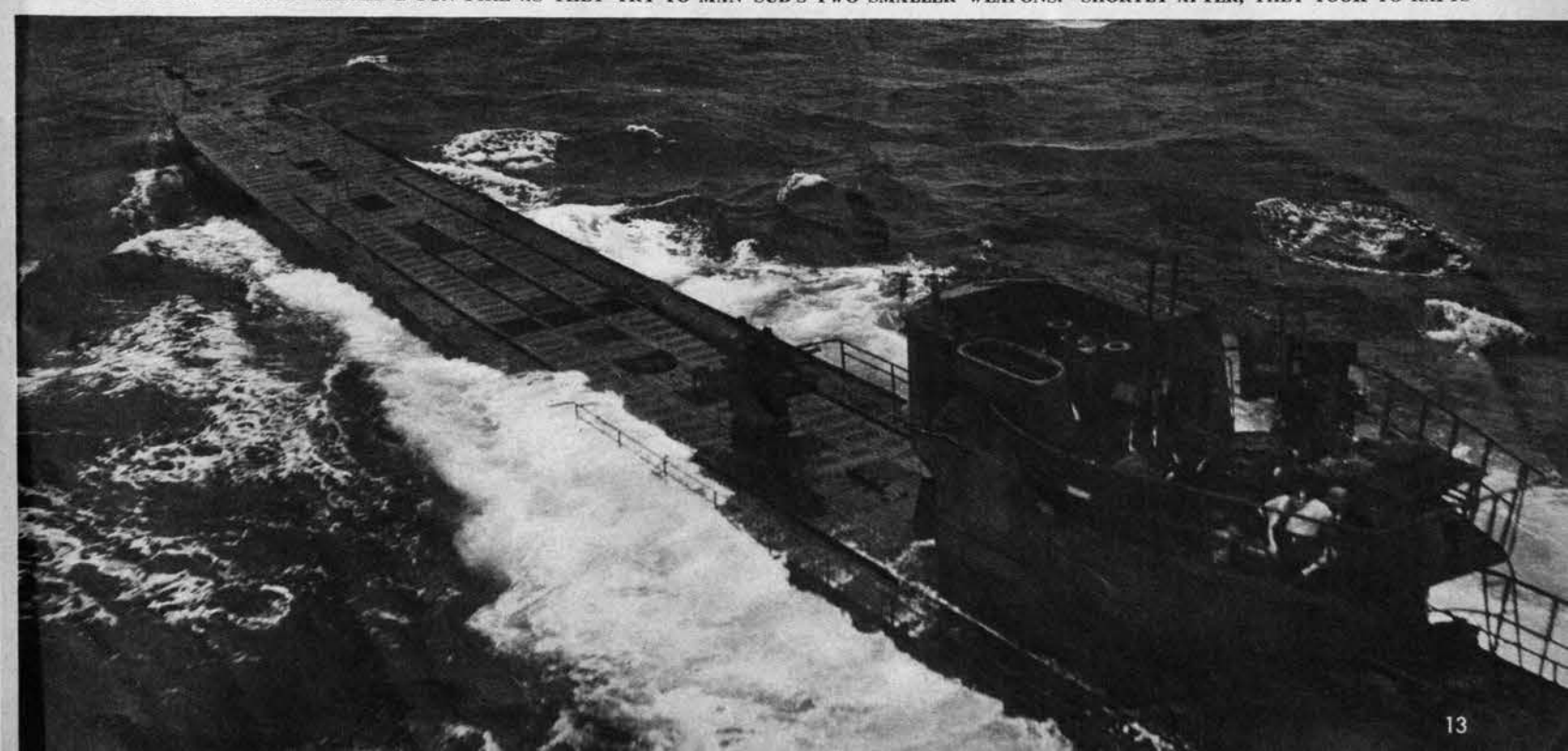


AMERICAN PLANES. CONNING TOWER, WITH TWO STEPS WHICH MARK IT AS NAZI U-BOAT, IS CLEARLY OUTLINED IN THIS DRAMATIC PHOTOGRAPH

DEPTH CHARGE BURSTS CLOSE TO HULL. NO SUBMARINE CAN STAND SUCH NEAR MISSES WITHOUT SUFFERING INTERNAL DAMAGE. SHIP IS DOOMED



CREWMEN CROUCH TO AVOID MACHINE-GUN FIRE AS THEY TRY TO MAN SUB'S TWO SMALLER WEAPONS. SHORTLY AFTER, THEY TOOK TO RAFTS







**Jap armored oddity** (above, below) is amphibian tank which "swims" with the aid of large barge-like pontoons fastened front & back. Pon-

toons are left on shore (foreground, above) and tank proceeds as tracked vehicle (center of clearing). Pictures came from Rabaul, Kwajalein.



# ARMORED VEHICLES MAKE NEWS WITH AMPHIBIAN DESIGNS AND TWO MOBILE GUNS



**Success of the Soviet offensive** last fall was due in no small part to introduction of this powerful new self-propelled

howitzer. This is the 128-mm. mounted on foremost Soviet tank chassis, the medium T-34. Pictures recently received in this

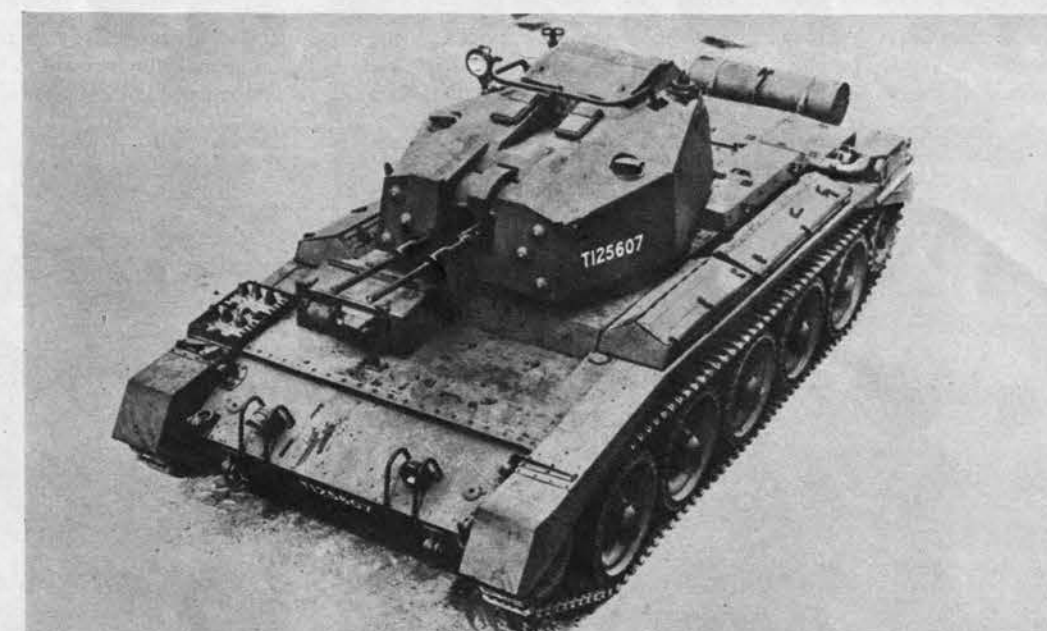
country show a fixed turret set well forward and sloping in unbroken line with the chassis

and sloping in unbroken line with the chassis bow. The gun mantlet, a large cylindrical protuberance about as long as the barrel itself, has an egg-shaped bulge to either side. T-34 chassis furnishes broad, sturdy gun platform.



**Invading Sherman tanks** now hitting the beaches are appearing with a new silhouette. Tall, removable periscope-like

extensions keep the tank's ventilator and exhaust openings dry as it plunges into the water from landing craft, heads for shore.



**British Ordnance** has designed several new mobile AA mounts for the defense of armored divisions. One of these is a conversion of the

Crusader, an obsolescent medium tank which is being used to mount twin 20-mm. AA guns set in new, lightly armored, six-sided turret.





**Mustang's tail** has been redesigned to give the famous U. S. and RAF fighter greater lateral stability. The fin now extends forward, fairing into the fuselage at shallow angle. The new tail is being shipped

to fighting fronts all over the world so that P-51D's (above) and P-51B's already in service will have this new recognition feature. The wing and the fuselage remain unchanged in this latest Mustang.

## CHANGES AND ADDITIONS IN ALLIES' WAR EQUIPMENT

As the exigencies of war place new demands on our fighting equipment, fully tested matériel is improved and revised; new weapons come into action and create new recognition problems. Each month on this page the *Journal* will picture more important changes in well-known craft and, as soon as released, will present pictures of new equipment of limited operational nature.



**Rudderow Class** destroyer escorts are currently appearing with revised armament. The ships now have enclosed gunhouses forward and aft, also a triple torpedo tube on the deckhouse abaft the stack.



**Porter Class** destroyers no longer have distinctively U. S. super-firing mounts forward. The No. 2 gun is now a light unshielded weapon and both stacks and the bridge have been reduced in height.



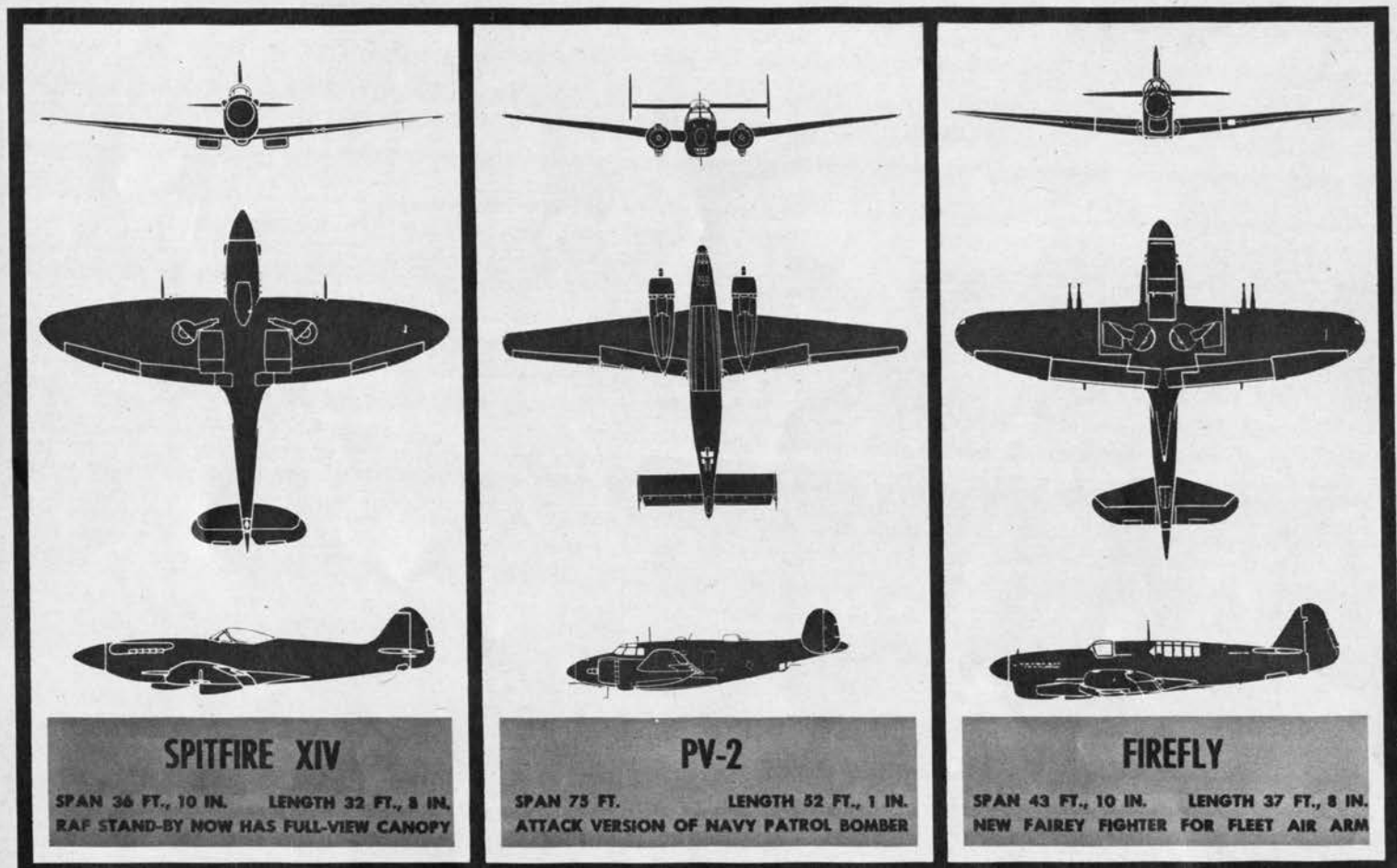
**Coventry** is the name for British Army's latest armored car. Large turret, straight, parallel sides and solid bow surface are important features. It has a strong resemblance to the Daimler armored car.



**Modified M-4 tank** plows across a Nazi minefield, setting off buried mines with whirling "Scorpion" chain attached to a revolving boom. Gun points to the rear when M-4 serves as "flail tank."



# NEW AND REVISED AIRPLANE SILHOUETTES



## SPITFIRE XIV

SPAN 36 FT., 10 IN.    LENGTH 32 FT., 8 IN.  
RAF STAND-BY NOW HAS FULL-VIEW CANOPY

## PV-2

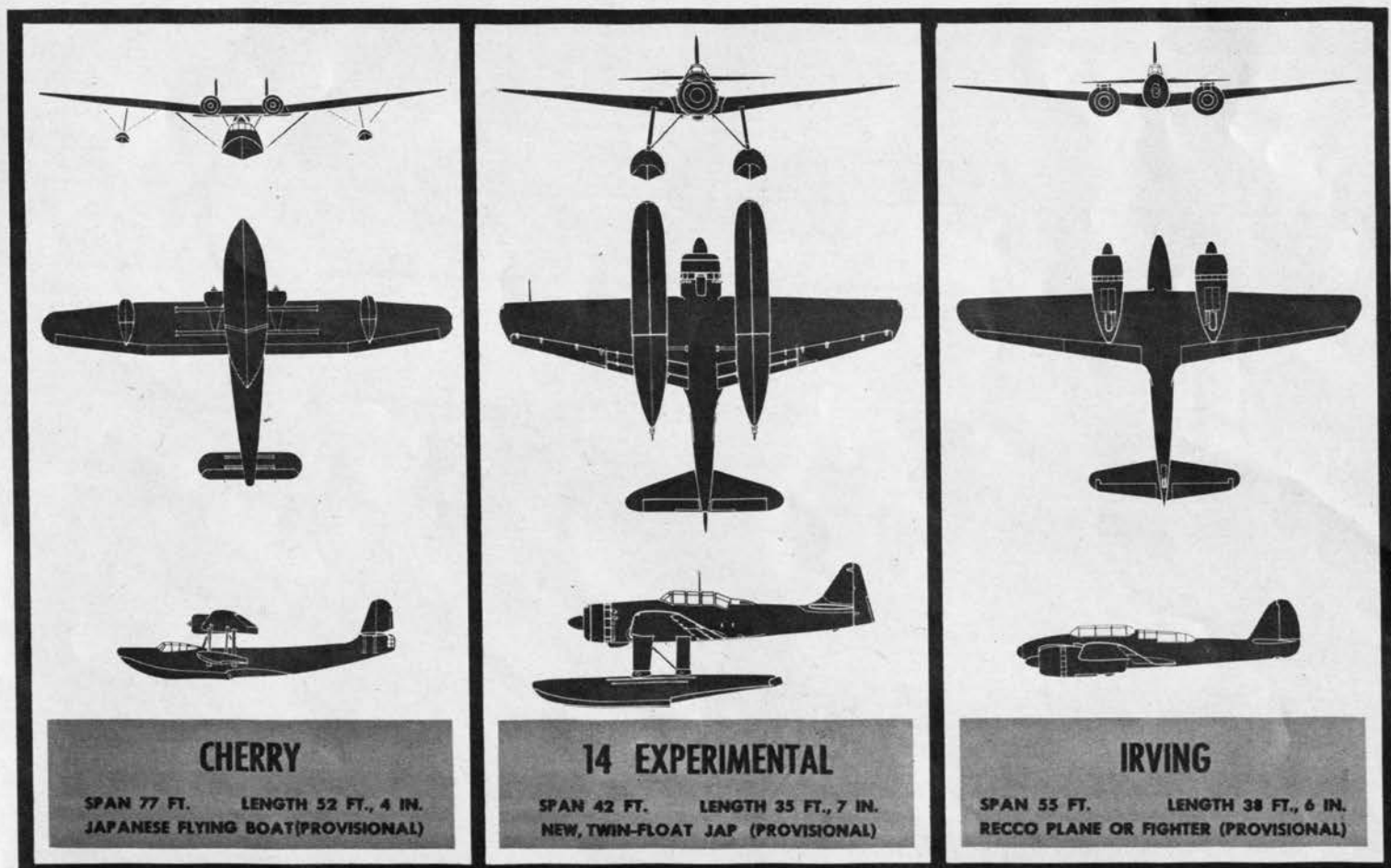
SPAN 75 FT.    LENGTH 52 FT., 1 IN.  
ATTACK VERSION OF NAVY PATROL BOMBER

## FIREFLY

SPAN 43 FT., 10 IN.    LENGTH 37 FT., 8 IN.  
NEW FAIREY FIGHTER FOR FLEET AIR ARM

Allied planes silhouetted above include two modifications and one new design. The Spitfire is Mark XIV and can be distinguished by its bubble canopy, rounded rudder and full elliptical wing. A solid

nose with five fixed guns, 10-ft. increase in wingspan and a broader fin mark the latest Ventura, PV-2. The Firefly is a Griffon-powered replacement for Britain's long-range shipboard fighter, the Fulmar.



## CHERRY

SPAN 77 FT.    LENGTH 52 FT., 4 IN.  
JAPANESE FLYING BOAT (PROVISIONAL)

## 14 EXPERIMENTAL

SPAN 42 FT.    LENGTH 35 FT., 7 IN.  
NEW, TWIN-FLOAT JAP (PROVISIONAL)

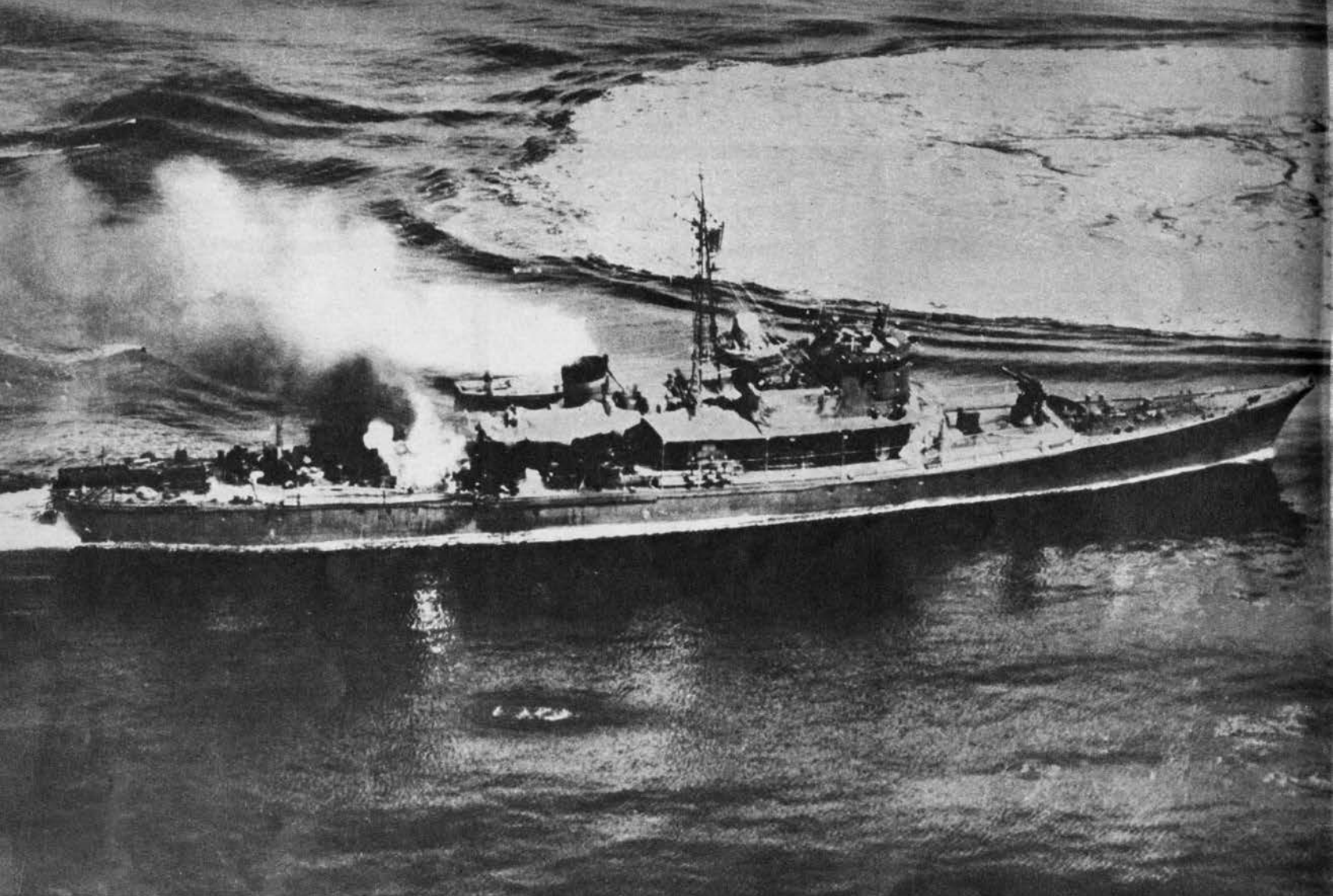
## IRVING

SPAN 55 FT.    LENGTH 38 FT., 6 IN.  
RECCO PLANE OR FIGHTER (PROVISIONAL)

Axis silhouettes for August are all Japanese. The most important of these is Irving (see p. 8), a Navy plane believed to exist as both a reconnaissance plane and a nightfighter. The nightfighter version

of Nick reported previously was probably Irving. The other new silhouettes are the twin-engine flying boat Cherry and a twin-float recco-divebomber, the 14 Experimental, not yet given a code name.



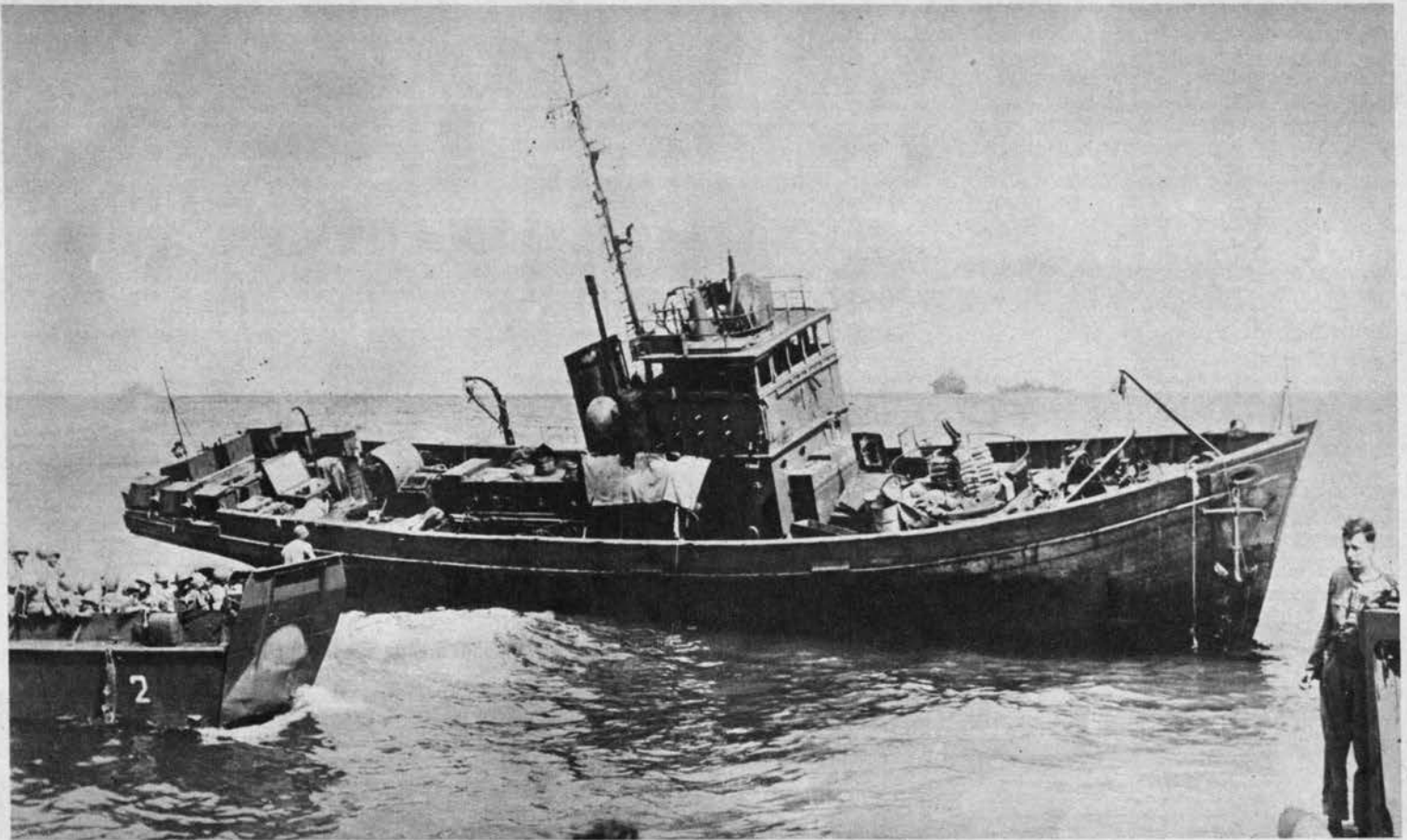


**Newest large subchaser** in the Japanese fleet is this 200-ft. craft (*above and below*), first photographed off New Ireland last March. It has been classified provisionally as a development of the PC-13

Class. Note particularly the short stack aft of the mainmast, low, round tower bridge and the long, sleek lines forward. A 3-in. gun is mounted forward. It has an estimated speed of 16 to 20 knots.







U. S. TROOPS PASS WRECKED WOODEN SUBCHASER BEACHED ON NEW GUINEA. IT IS 98 FT. LONG, DOES 10 KNOTS, CARRIES 16 DEPTH CHARGES

# JAPANESE ESCORTS

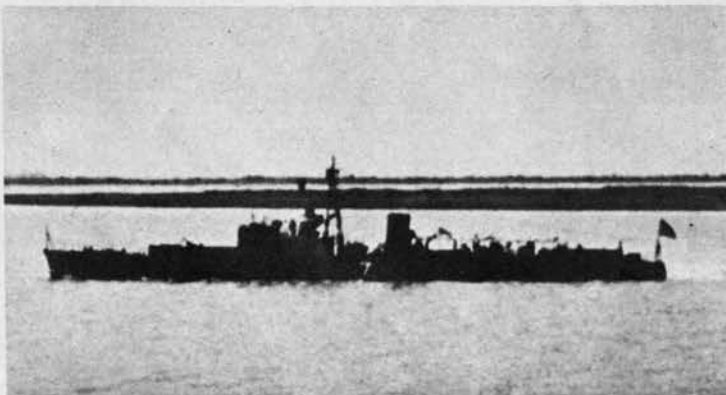
Minor ships of Imperial Navy try desperately to stem U. S. and British submarine offensive

Latest estimates released indicate that since the beginning of the war U. S. submarines have sunk 640 Jap merchant ships, probably sunk 36 more, and damaged 115. The attrition rate on Japanese vessels of all types has jumped from an average of 9.6 sinkings per month in 1942 to 19.9 in 1943 to 38.7 during the first three months of this year according to estimates. Further heavy damage has been inflicted by the British and Dutch.

Fully aware of the enormous difficulty of keeping long supply lines open, Japan is now throwing every available hull into escort fleets. In addition, construction of at least one type of wooden subchaser has been initiated. It is believed that many ships hith-

erto listed as torpedo boats, minesweepers and gunboats may be on escort duty both in home waters and in the Southwest Pacific. And since they are being encountered in steadily increasing numbers they are providing the bulk of Pacific surface action.

In view of Japan's extreme needs of escort craft, the *Journal* is presenting on these pages representative types of this enemy minor combatant fleet. Not all of these types have been spotted since Pearl Harbor and it is probable that many have not left their home waters. But with U.S. submarines working into the home harbors of Japan itself, it is more than likely that these craft will become increasingly important recognition problems.

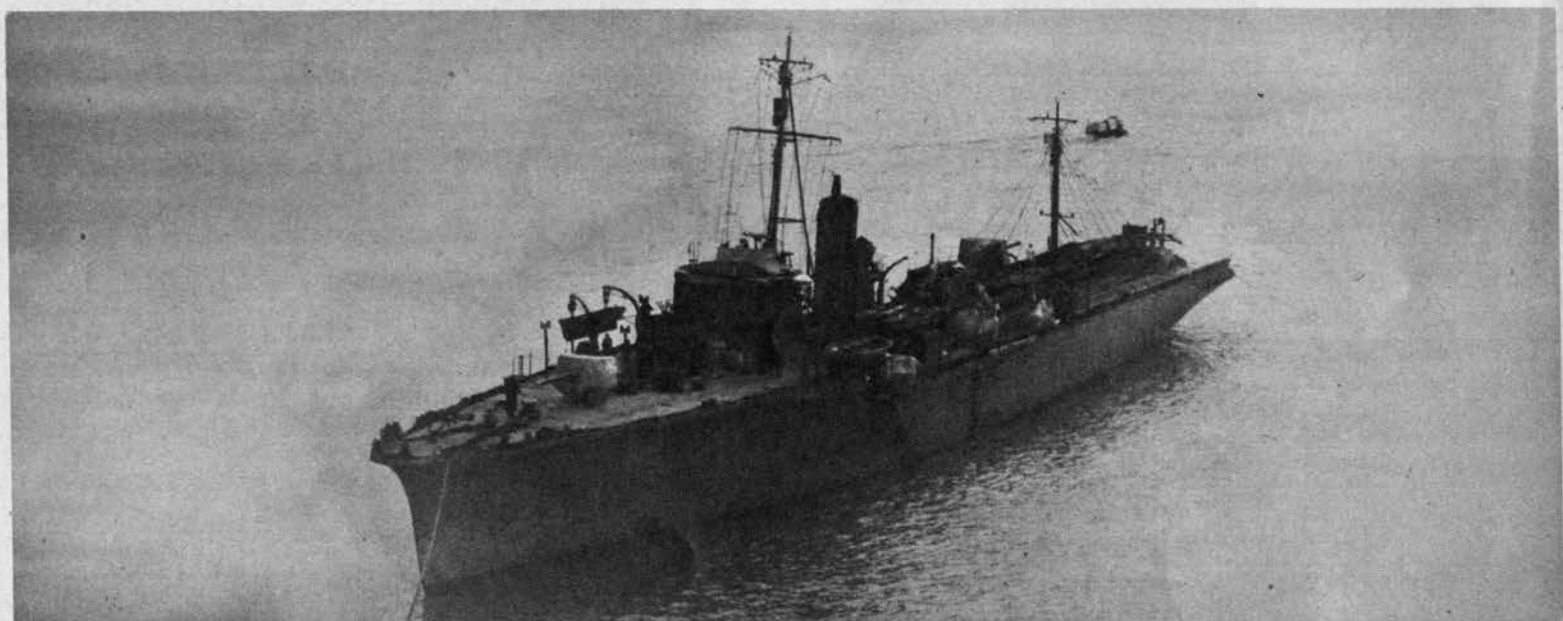


Low tripod mast, small stack amidships mark subchaser of PC-4 Class. Length: 178 ft. Displacement: 270 tons. Speed: 20 knots.



PC 40-44 Class subchaser has its stack set close to prominent bridge. A 33-knot ship, she is 146 ft. long and displaces 170 tons.





**Shirataka is the oldest** of the fleet minelayers which were constructed from 1929 to 1936 (*below*). Her length is nearly 260 ft.; beam, 37 ft., 9 in.; displacement, 1,405 tons. Present armament is uncertain

but originally consisted of two single-purpose 4.7-in. shield mounts in addition to anti-aircraft machine guns. The tall stack with a slight rake, the low bridge and curved clipper bow help identify the Shirataka.



**Yaeyama is a longer,** faster but lighter ship than Shirataka which she closely resembles. The chief difference between the two vessels is the Yaeyama's stubby deckhouse set aft. Having a speed of 20

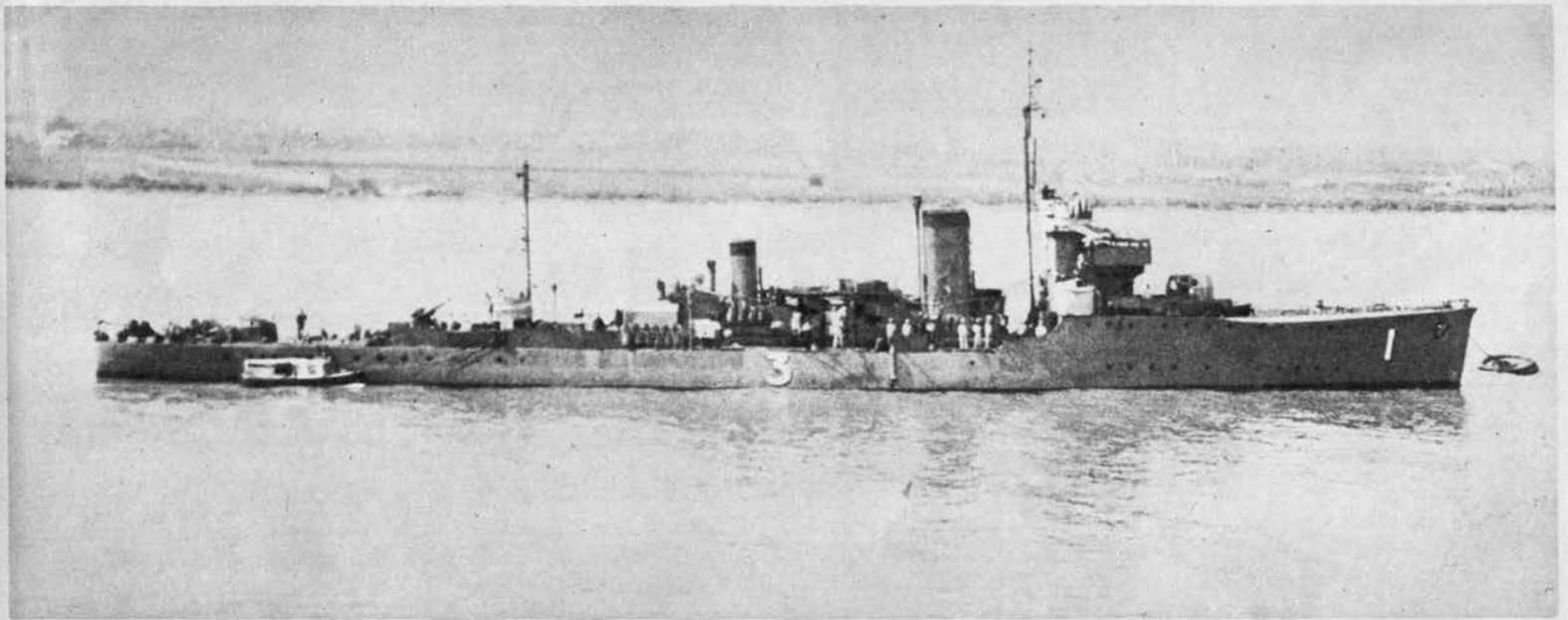
knots as compared to the Shirataka's 16, she carries two 3-in. and two 4.7-in. dual purpose guns in addition to depth charges and light anti-aircraft weapons. She is 280½ ft. long and displaces 1,135 tons.



**Itsukushima,** the largest of the Japanese minelayers, is also considered the most important. She has a length of 339 ft., a 42-ft. beam and a normal displacement of 2,020 tons. Flush deck, short stack

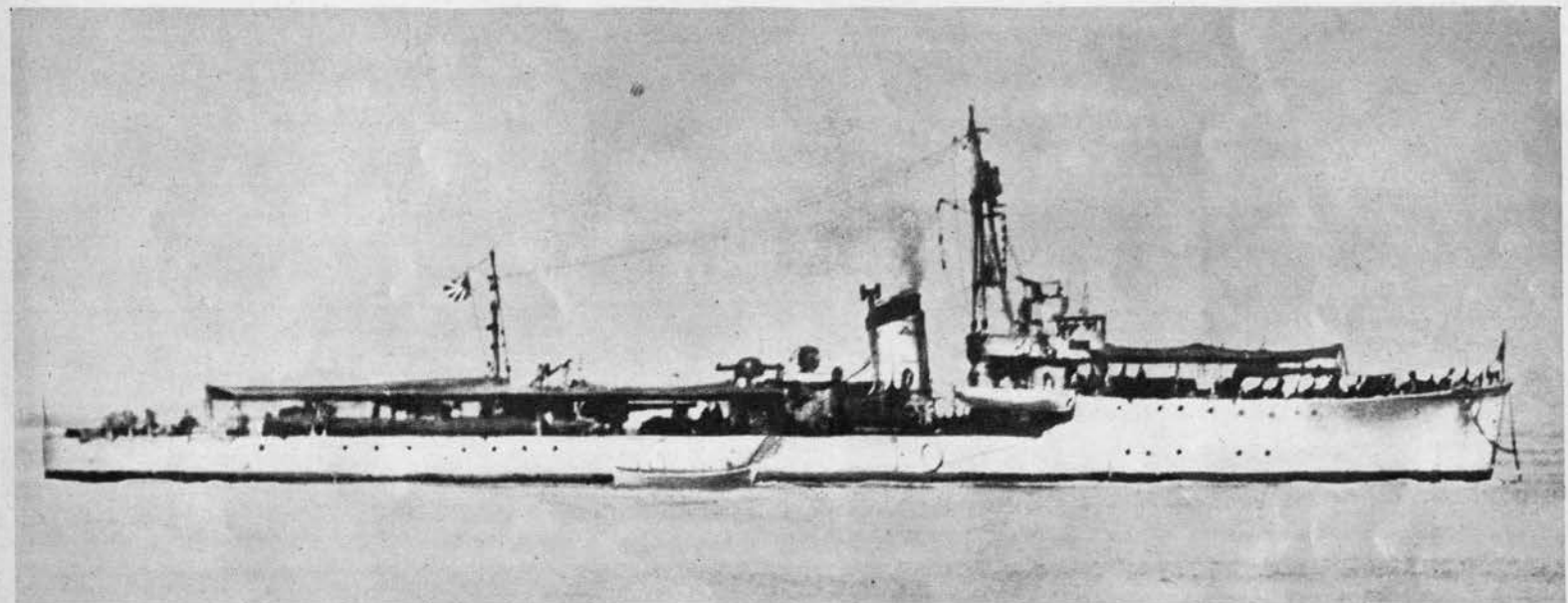
just aft of amidships and a tall, rounded tower bridge set atop the long forward deckhouse are main recognition features. Itsukushima's main armament is heavy, consisting of three 5.5-in. guns and two 3-in. AA's.





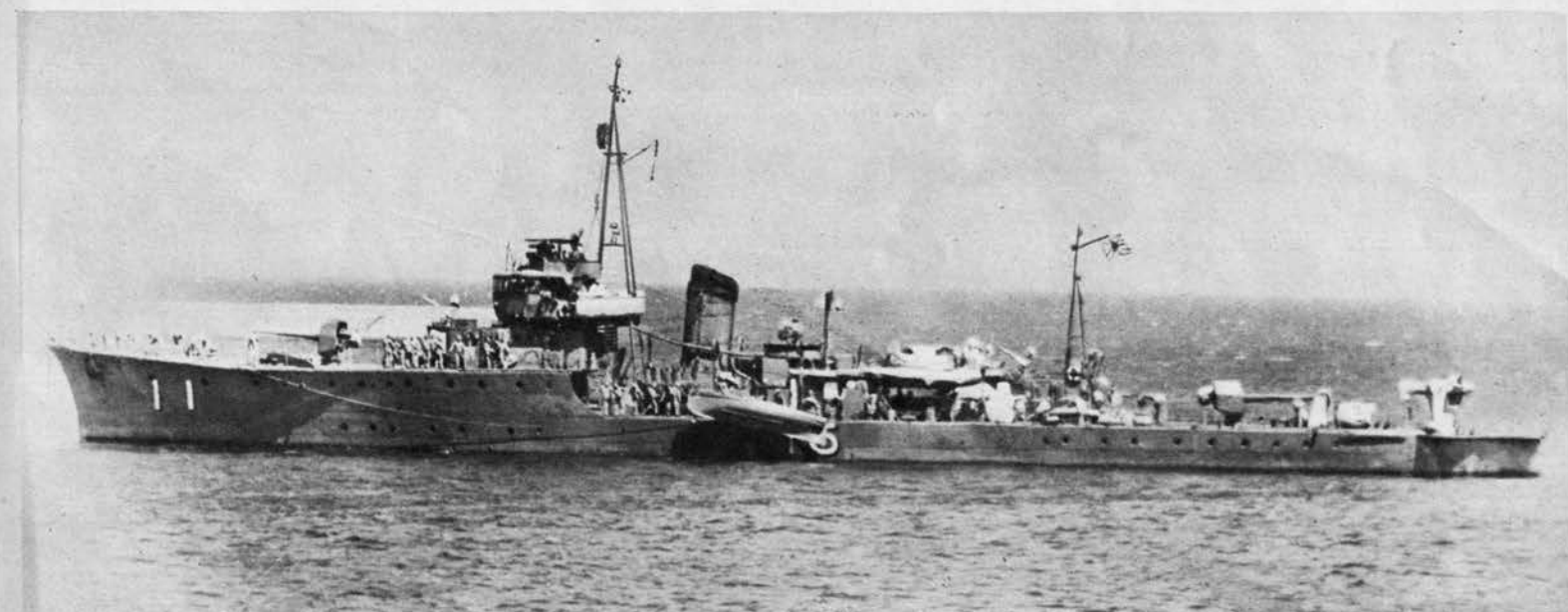
**Destroyer-like appearance** characterizes this minesweeper of the six-unit No. 1 Class. Note the large stack just aft of the deckline break, small stack amidships. One 4.7-in. gun is mounted forward, one aft,

while a 3-in. AA weapon completes main armament. These ships have an over-all length of 235 ft., displace 700 tons and can make a speed of 20 knots. Most of them were completed between 1923 and 1925.



**No. 7 Class** of minesweepers contains AM-13-18, the seeming inconsistency arising from Japanese classification. They have approximately the same speed and dimensions as No. 1 Class shown above.

The single stack is raked and prominent tripod mast is set just aft of the bridge. Three 4.7-in. guns can be seen under the tarpaulin, one forward, one amidships just above the lifeboat and one aft of mainmast.



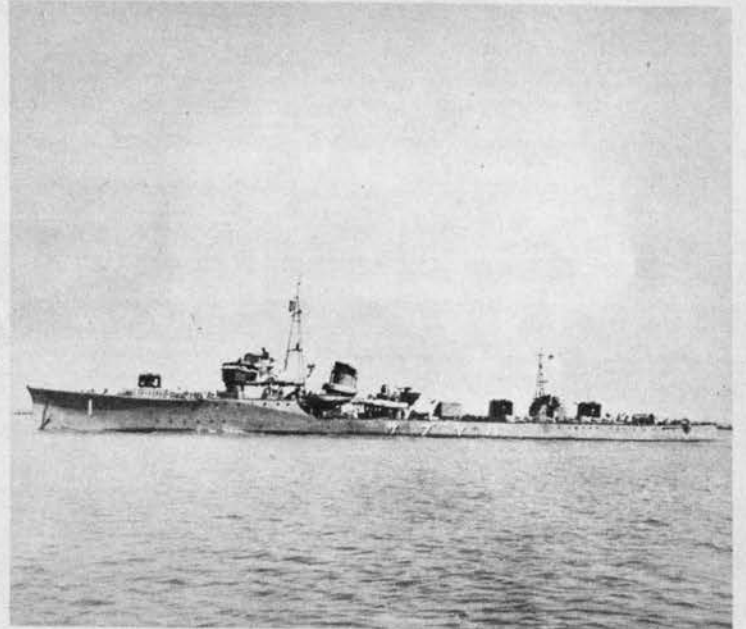
**AM-11** belongs to the No. 13 Class according to the enemy's classification system. Speed, length and beam are almost identical with those of the foregoing classes, but the tonnage is between 492 and

511. Only two 4.7-in. guns are carried. Low deckhouse extends aft from stack to mainmast. Note how the orthodox clipper bow of this class differs from Japanese clipper bows of other ships on these pages.

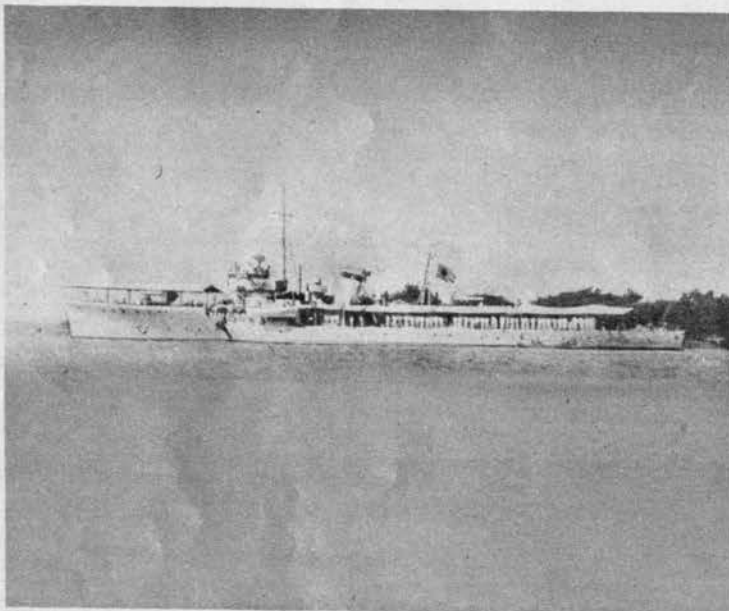




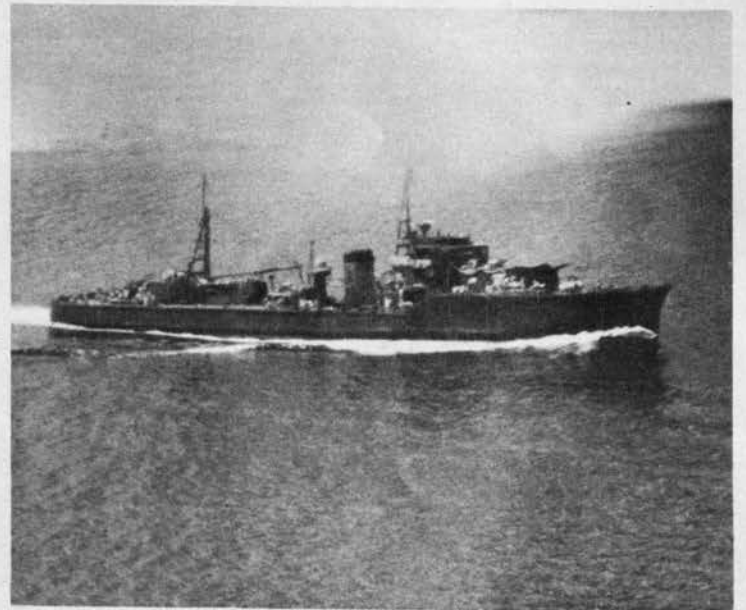
**Hatsukari** is one of four Chidori Class torpedo boats. These correspond to Nazi Wolf-Möwes. Chidoris and Otoris (*right*) carry three 4.7-in. guns, three 21-in. torpedo tubes and displace under 600 tons.



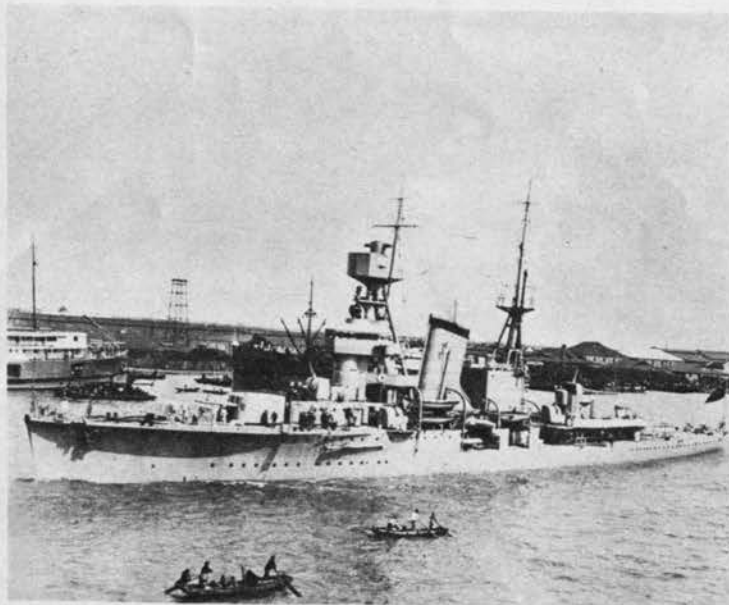
**Otori Class** torpedo boats closely resemble Chidoris. Note the Jap clipper bow, tripod foremast, short raked stack and long, low after section. The ships are 286½ ft. long and can make 26 to 28 knots.



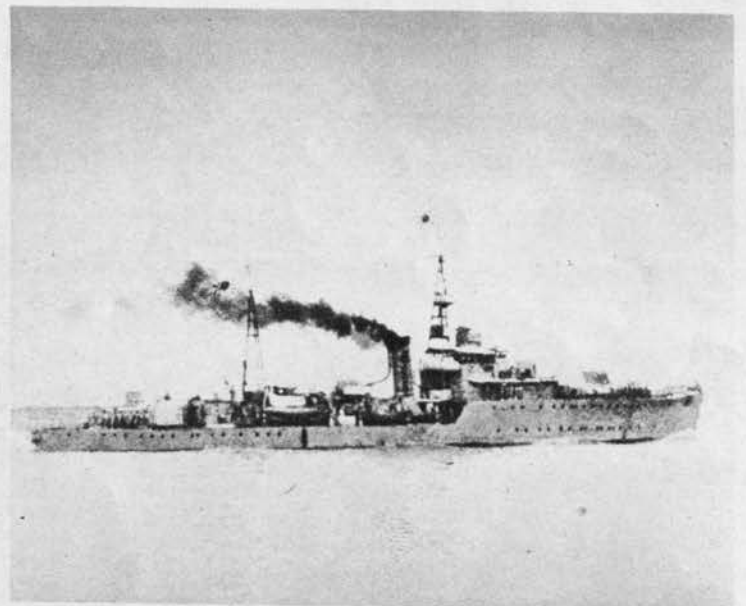
**Shimushu Class**, formerly believed to be minelayers and now reclassified patrol frigates, consists of eight units. This class has raked stack and pole foremast, while the hull breaks forward of the bridge.



**New patrol frigate**, photographed at Rabaul, is believed to be a development of the Shimushu Class (*left*). She has a tripod foremast, more prominent mainmast. Twin gun mounts are placed fore & aft.



**Ning Hai** is one of two gunboats captured from Chinese in 1937. Ship's prominent stack is directly abaft the bridge and forward of the hangar. Six 5.5-in. guns are carried, two forward and four aft.



**Uji** belongs to the newest Japanese gunboat class, the Hashidates. Stack is slender, masts are tripod. Bow is raked rather than Jap clipper. This 1,200-tonner is 225 ft. long and has speed of 20 knots.





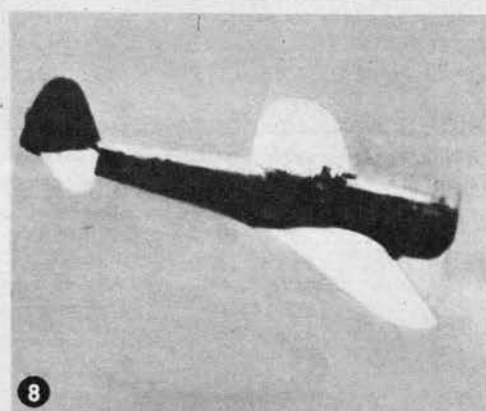
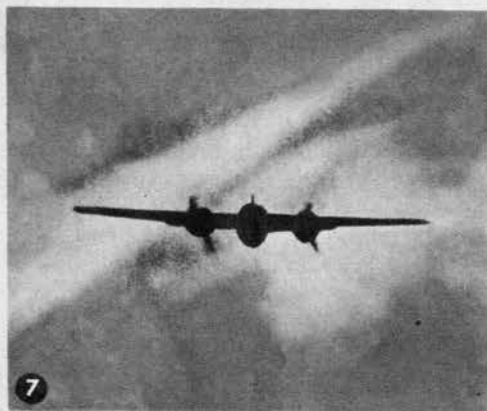
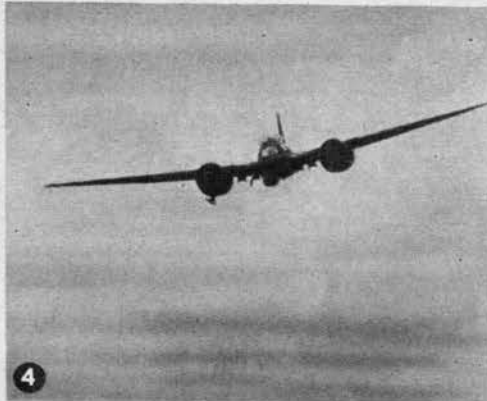
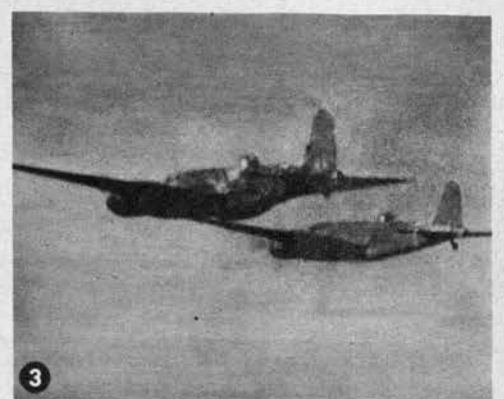
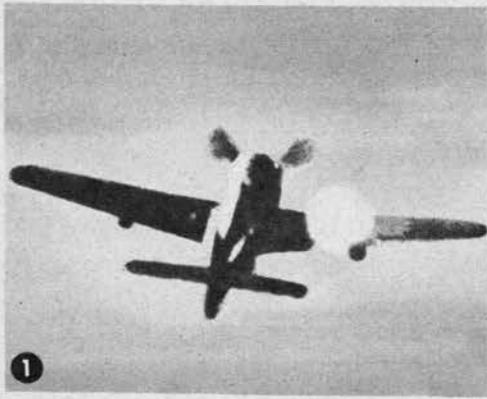
**Speedy PT's** (*above and below*), Dutch built and operated, were salvaged by the Japanese in 1942. These speedy boats are 61 ft. long, have a 12-ft., 9-in. beam and displace 15 tons. Their 1,260-hp.

engines can drive them at a speed of 38 knots. Armament consists of two 21-in. torpedo tubes, light anti-aircraft weapons and depth charges. Cabin amidships is the outstanding recognition feature.





# QUIZ NO. 2: CAUGHT BY THE GUN-CAMERA



For answers, see p. 48





M-10 TANK DESTROYER CLIMBS NORMANDY BEACH WITH GUN REVERSED. PAIRED BOGIE WHEELS, FRONT DRIVING SPROCKET TYPIFY U. S. DESIGN



Only its running gear identifies this M-4 tank. It has three pairs of tandem bogie wheels like the M-7 (below) and the M-10 (top).



The suspension system of this U. S. M-7 rumbling through dusty Terracina on the road to Rome is same as that of the M-4 (above).

# TRACK GEAR

## Suspension systems are distinctive features

Spotting a vehicle's identity is much easier when its running gear is visible. The arrangement of wheels and rollers often gives a clue where nothing else will. When not obscured by dust, brush or mud, they tell a great deal about the vehicle's nationality and capabilities.

There are two types of running gear for armored vehicles, tracked and non-tracked. U. S. tracked vehicles, with few exceptions, rely upon small wheels articulated in pairs, tandem style. German tanks Marks II, III and IV have medium-sized wheels, evenly spaced, with three or four prominent top rollers to return the track. German heavy tanks Marks V and VI and half-tracks have unique overlapping wheels, large in size, which support the track without rollers. The Russian T-34 and British Cromwell have adopted the large, evenly spaced wheels of the Christie-type suspension.

Armored cars which are non-tracked vehicles, appear in silhouette on pages 26-27. All except the Japanese have large automobile-type, rubber tired wheels. The number and arrangement of these wheels is one of the chief recognition differences between U. S., British and German cars.

Running gear is the keystone of a vehicle's efficiency. The variety of types shown on these pages proves that no one example is perfect, that all represent compromises to get best combination of speed, durability, comfort and accuracy of fire.



# ARMORED VEHICLES

## PRINCIPAL COMBAT TYPES



### UNITED STATES

SCALE: EACH SQUARE EQUALS 5 FT.



SCOUT CAR M-1A1



ARMORED CAR M-5



ARMORED CAR M-20



LIGHT TANK T-3E1 (AIRBORNE)



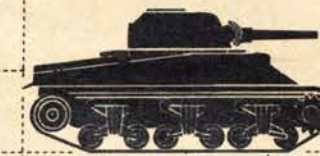
LIGHT TANK M-5A1



MEDIUM TANK M-4



MEDIUM TANK M-4 (76-MM. GUN)



MEDIUM TANK M-4 (105-MM. HOW.)



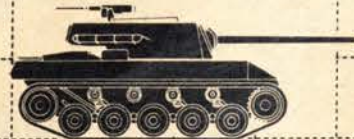
HOW. MOTOR CARRIAGE M-5



HOW. MOTOR CARRIAGE M-7



GUN MOTOR CARRIAGE M-10



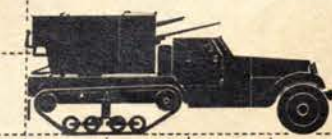
GUN MOTOR CARRIAGE T-70 (M-18)



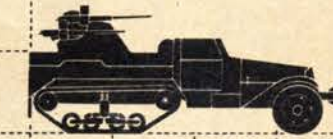
GUN MOTOR CARRIAGE M-12



HALF-TRACK M-3A1



MULTIPLE GUN CARRIAGE M-15



MULTIPLE GUN CARRIAGE M-16

### BRITISH



UNIVERSAL CARRIER



LYNX ARMORED CAR



DAIMLER ARMORED CAR



OTTER ARMORED CAR



HUMBER ARMORED CAR



ARMORED CAR T-17E1



A.E.C. ARMORED CAR



VALENTINE TANK



CROMWELL TANK



CHURCHILL TANK



SP 25-POUNDER

### SOVIET



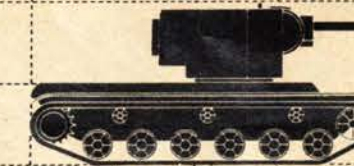
LIGHT TANK T-70



MEDIUM TANK T-34



HEAVY TANK KV-1



HEAVY TANK KV-2

### GERMAN



4-WHEELED ARMORED CAR



6-WHEELED ARMORED CAR



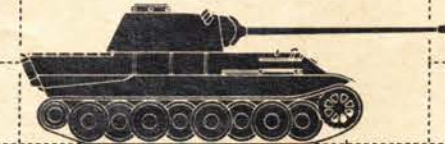
8-WHEELED ARMORED CAR



PzKw III (LONG 75-MM.)



PzKw IV (LONG 75-MM.)



PzKw V



PzKw VI



76-MM. SP ON PzKw 38 CHASSIS



75-MM. SP ON PzKw III CHASSIS



FERDINAND



ARMORED HALF-TRACK (3-TON)



HALF-TRACK (8-TON)

### JAPANESE



LIGHT ARMORED CAR 2597



LIGHT TANK 2595



MEDIUM TANK 2597

Pictured here are 46 armored vehicles now in action on world battle fronts. They include the armored cars, tanks, self-propelled guns and half-tracks of the U. S., Great Britain, the U. S. S. R., Germany and Japan. Scaled to size, the imposing 72-ton German

Ferdinand and modest but operationally important British Universal Carrier represent the extremes in size of armored vehicles in this war. The U. S. and Germany have a large variety of types, whereas the U. S. S. R. has fewer designs but not necessarily less armored strength.

Thus far, Japan's armored strength has not been very formidable. On a chart such as this, national trends may be observed in the design of running gear, hulls, turrets and armament. Running gear in particular is well illustrated by the profile view. The accompanying

pages (25-31) carry a description of running gear of present-day tanks and self-propelled guns. Since space does not permit the inclusion of armored cars and a number of other specific vehicles, we recommend the study of them from the illustrations on this chart.



# U. S. SUSPENSIONS CONTRAST WITH THE CHRISTIE-TYPE. CHURCHILL IS UNIQUE



U. S. LIGHT TANKS LEAD THE WAY FOR INFANTRY AT ARAWE. M-5A1 HAS TWO PAIRS OF SMALL BOGIE WHEELS WITH PROMINENT BRACKET BETWEEN,



LARGE REAR IDLER. AT LEFT IS CAPTURED LOG PILLBOX



Russia's great medium tank, T-34, is the world's outstanding example of the use of Christie-type suspension, an American design more than 25 years old. This suspension is characterized by large, evenly spaced bogie wheels touching top and bottom of track.



British Cromwell doesn't have T-34's wide track but has borrowed its five large wheels, high-set front idler and rear driving sprocket. Churchill (below) is unusual in having eleven small bogie wheels, very high rear sprocket and front idler, and long, overall tracks.



U. S. airborne tank the T-9E1, has a suspension very much like that of the M-5A1 (above). An added feature is the horizontal brace which supports the lightweight bogies. Fenders often alter the appearance of a tank's undercarriage. Here they cover the top of the track and partly hide two return rollers.



U. S. M-8, a self-propelled 75-mm. howitzer, has a chassis and suspension resembling that of M-5A1 shown at top. A



large trailing idler in direct contact with the ground promotes speed at the expense of durability and is characteristic of all three of the armored vehicles on this page.





# VARIED NAZI SUSPENSIONS PLUS COMPARABLE EXAMPLES OF RUSSIAN AND U.S. TYPES



Nazi soldiers cluster on top of a PzKw IV tank. Armored side skirting, bracketed to Mark IV's chassis, alters the appearance of the undercarriage, leaves only the sprocket and eight small wheels exposed.



Russian KV-1 (above) and U. S. M-18 (below) have suspensions which loosely resemble Nazi PzKw's III and IV. KV-1 has six bogie wheels, three rollers; M-18 has five wheels, four rollers and a front drive.



Lying in wait for Allied tanks, six German self-propelled guns were trapped in their own ambush in an Italian lane. Their 75-mm. weapons are mounted on the chassis of a PzKw III light tank, now ob-

solescent. The running gear of this chassis is much like that of the PzKw IV tank. Driving sprocket in front and idler wheel in rear are both large. The PzKw III has six medium-sized, evenly spaced bogie

wheels and three prominent return rollers. The IV has eight smaller bogie wheels and four return rollers. For a quick recognition aid, remember that the Mark III has three rollers; Mark IV, four rollers.



Yanks in Italy captured this German half-track loaded with 88-mm. shells. Like U.S. half-tracks, it has pair of unpowered truck wheels in front. Its overlapping bogie wheels are unique German feature.

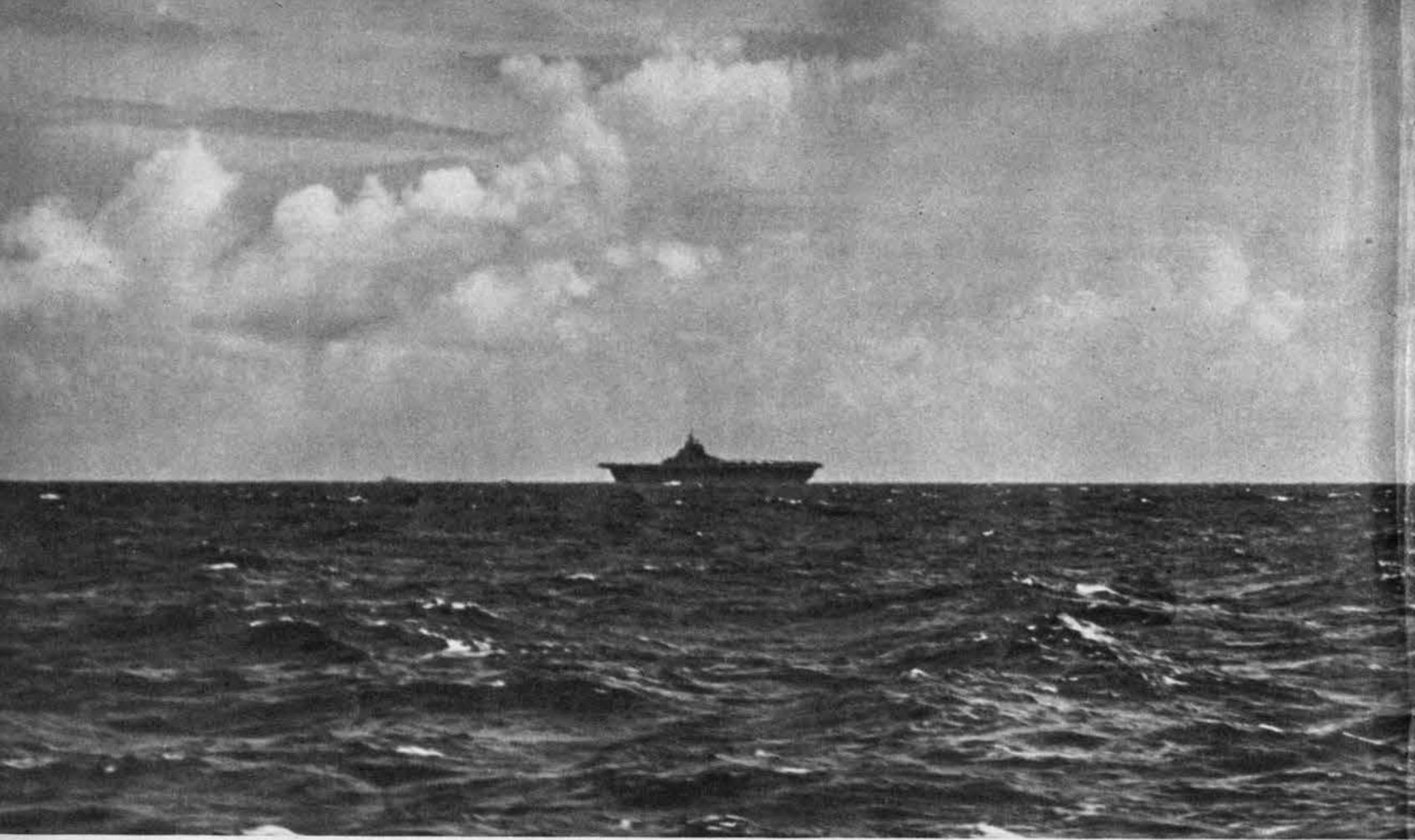


Germany's continued interest in the overlapping-wheel design for track support is evident in her newest tanks, PzKw V Panther (above) and the PzKw VI Tiger at right. Both tanks have eight bogie wheels.

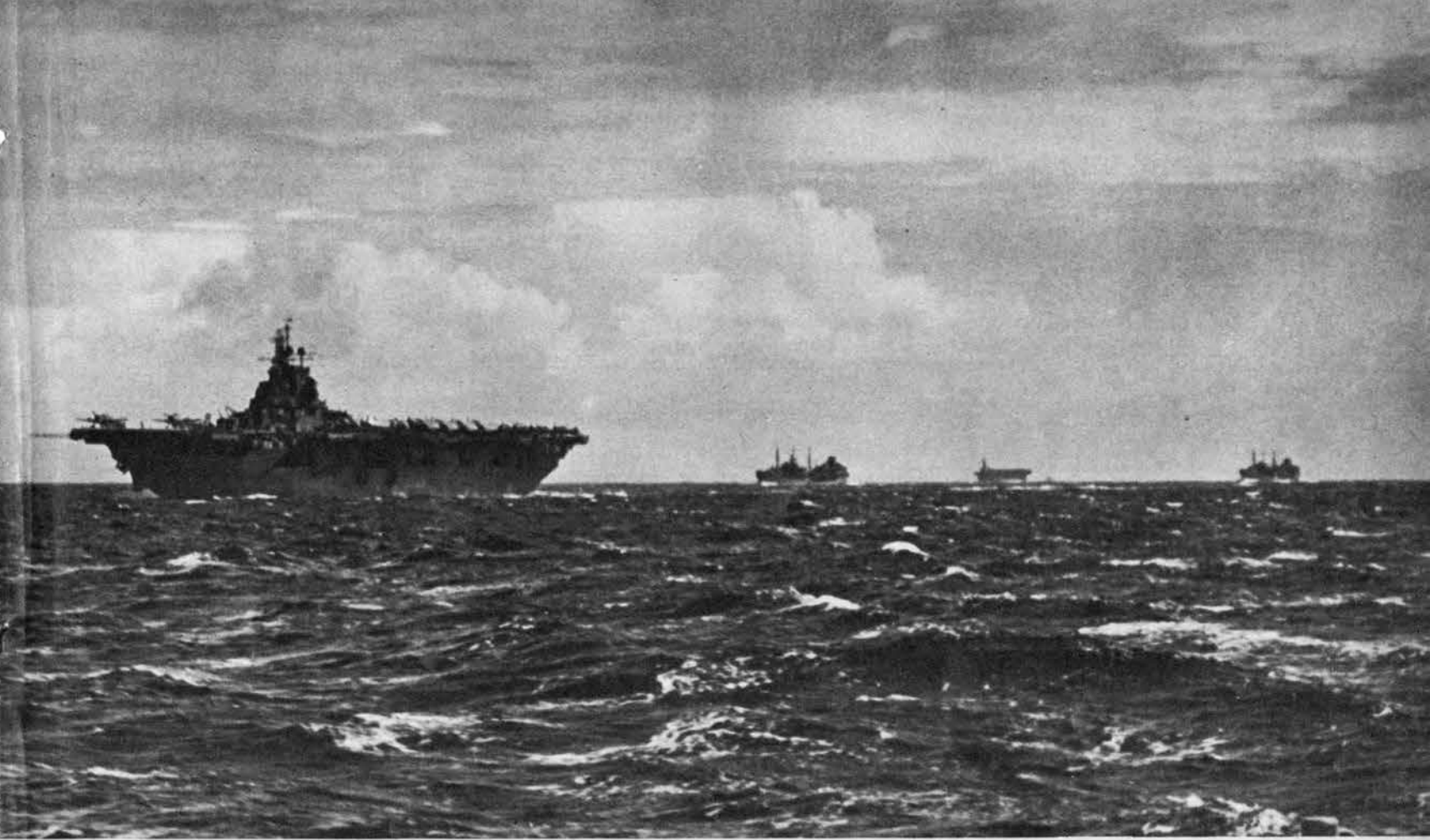


Nazi propaganda picture advertises the ramming technique of their 62-ton Tiger tank. This rear view, with the 88-mm. gun reversed, illustrates the Tiger's wide track, large idler and flat, overlapping wheels.





PYRAMIDAL ISLANDS OF ESSEX CLASS SHIPS, AMERICA'S STANDARD FLEET CARRIERS, MARK HORIZON AS LARGE PACIFIC TASK



FORCE MOVES IN ON WAKE ISLAND DURING THE RAID OF OCT. 5, 1943. AN INDEPENDENCE CLASS CVL IS SECOND FROM RIGHT

# AIRCRAFT CARRIERS

FAST, MOBILE AIRDROMES ARE VITAL TO FLEET'S SUCCESS

One of the great developments of the Pacific war has been the emergence of the aircraft carrier as the chief striking element of the fleet. Though the Royal Navy has seen considerable ship-to-ship action in Atlantic and European waters, the U. S. Navy has fought its greatest daylight battles in plane-against-ship combat. In this type of fight, the carrier becomes the most important part of the battle line.

Strategically, a modern naval offensive requires airpower for both defense and attack. Since plane-carried bombs and torpedoes have a range far exceeding that of the biggest naval guns, they can attack long before the capital ships of the opposing forces are within striking distance of each other. And though the defensive value of shipboard antiaircraft fire should not be underestimated, the first defense against air attack is strong fighter cover.

From this, the two-year retirement of the Japanese fleet seems almost certainly to be the result of its carrier losses in the great battles of 1942. Lacking sufficient airpower to engage in the new-style naval war, the main Japanese units were withdrawn behind the island barriers until their carrier strength could be revived. Meanwhile the available Japanese carriers were used as plane ferries to supply the many land bases which are the chief defense of the island empire.

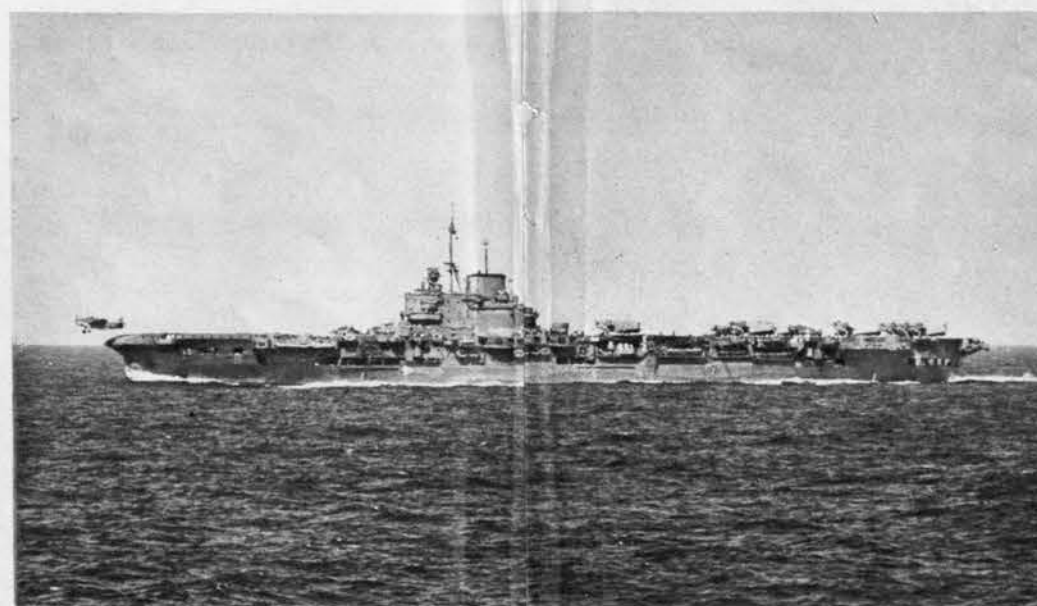
As the carrier fleets of the opposing navies line up in this decisive year of worldwide war, the great ships are the U. S. Essex Class and the British Illustrious Class. These are big, fast vessels. Each one carries a strong complement of fighter and bomber aircraft and each is strongly defended against air attack. Supporting them in fleet action are our old stand-bys such as the Enterprise,

Saratoga and Furious, and the new U. S. CVL's of the Independence Class. Opposing these ships are the Japanese Shokakus and Hayatakas. At their commissioning in 1941 the Shokakus were possibly the best carriers afloat. In the Coral Sea and Santa Cruz fights they showed an ability to absorb terrific punishment. The Hayatakas, converted passenger liners, may have been eliminated in the recent violent actions in the Marianas.

Both sides also have numerous CVE's for escort, ferrying and limited combat use. Though our Bogue's, Sangamon's and Casablanca's are most frequently seen escorting convoys or ferrying planes to our new-won fields, they have also seen combat. The Japs' Zuihos and Otakas have largely been used in supply work, but as we draw close to the mainland of Japan they will undoubtedly be thrown into the larger battle for the control of the Pacific.



ESSEX'S ISLAND rises flush with hull almost directly amidships. The flight deck is square cut, with indentations forward and aft and a deck-edge elevator forming a projection opposite tower.



H.M.S. VICTORIOUS, a British first-line carrier, resembles our Essexes but

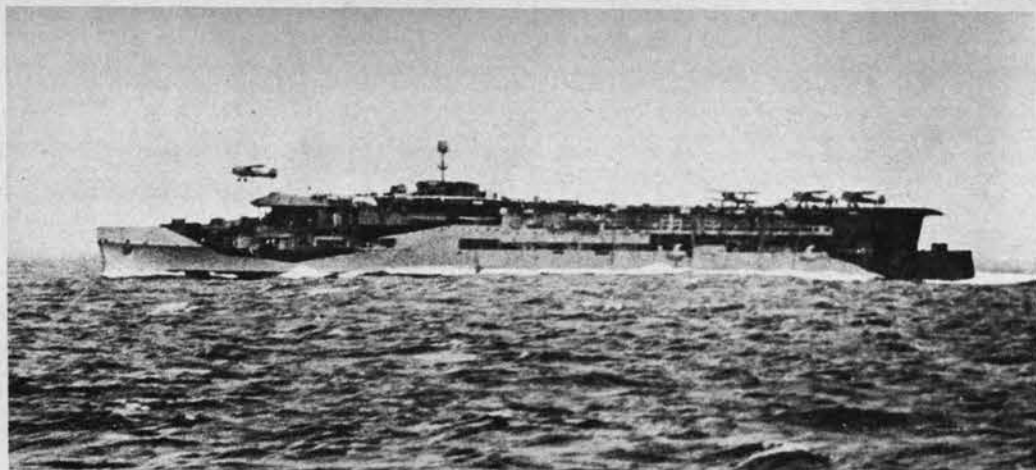
differs in having island further forward. Tower is also less pyramidal and cleaner.



BRITISH CARRIERS have distinctive curved forward and after deck edges. Also distinctive are the pillbox main armament, cutouts along sides of decks as in the Illustrious Class above.



BIGGER, OLDER SHIPS AND NEW CVL'S BACK THE ALLIED MAIN LINE



HIS MAJESTY'S OLDEST CARRIER, the Furious, has a short flight deck on a long cruiser hull. The small forward island is inconspicuous, is set into the irregular, rounded flight deck.



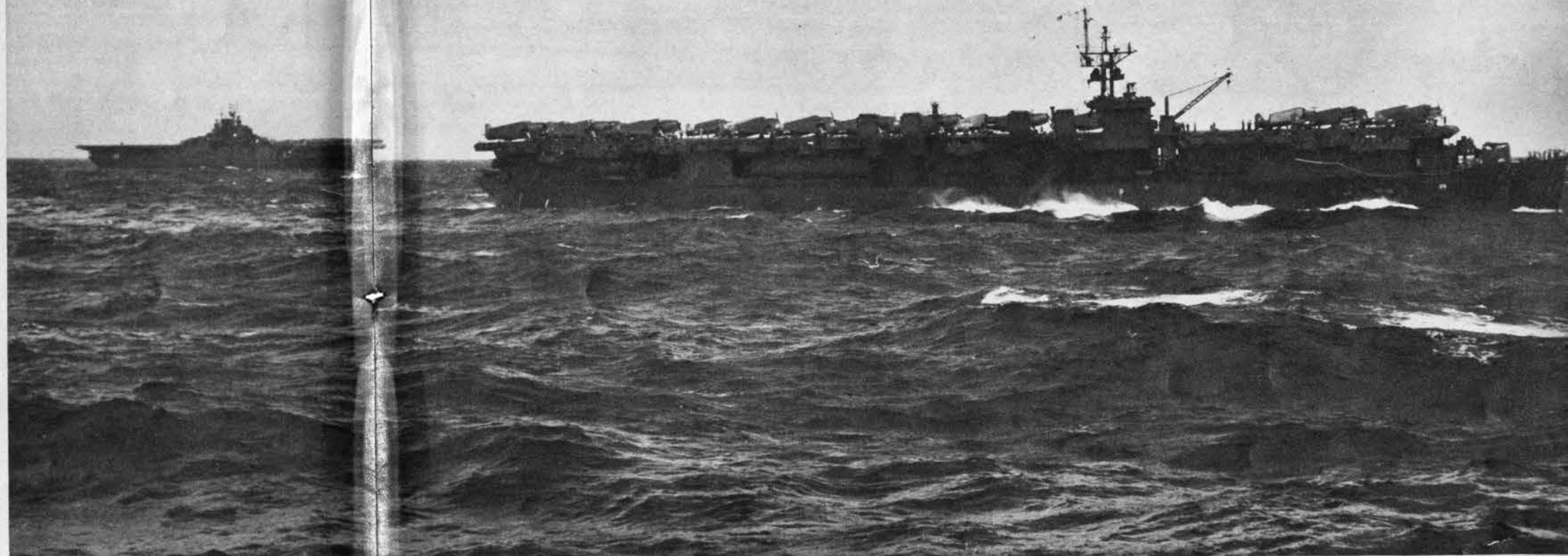
THE "BIG E" is the only survivor of her class. Her battle record includes nearly every major fight in the Pacific. She resembles H.M.S. Illustrious but has longer and higher superstructure.



OLDEST U. S. KEEL-UP CV is the Ranger. Unlike our other big carriers, she has her stacks separated from small rectilinear island. Three stacks project from each side in the aft quarter.



BIGGEST CARRIER AFLOAT, the old Saratoga is still doing excellent service. From above, her long flight deck and separated tower and stack are surest clues to her quick recognition.

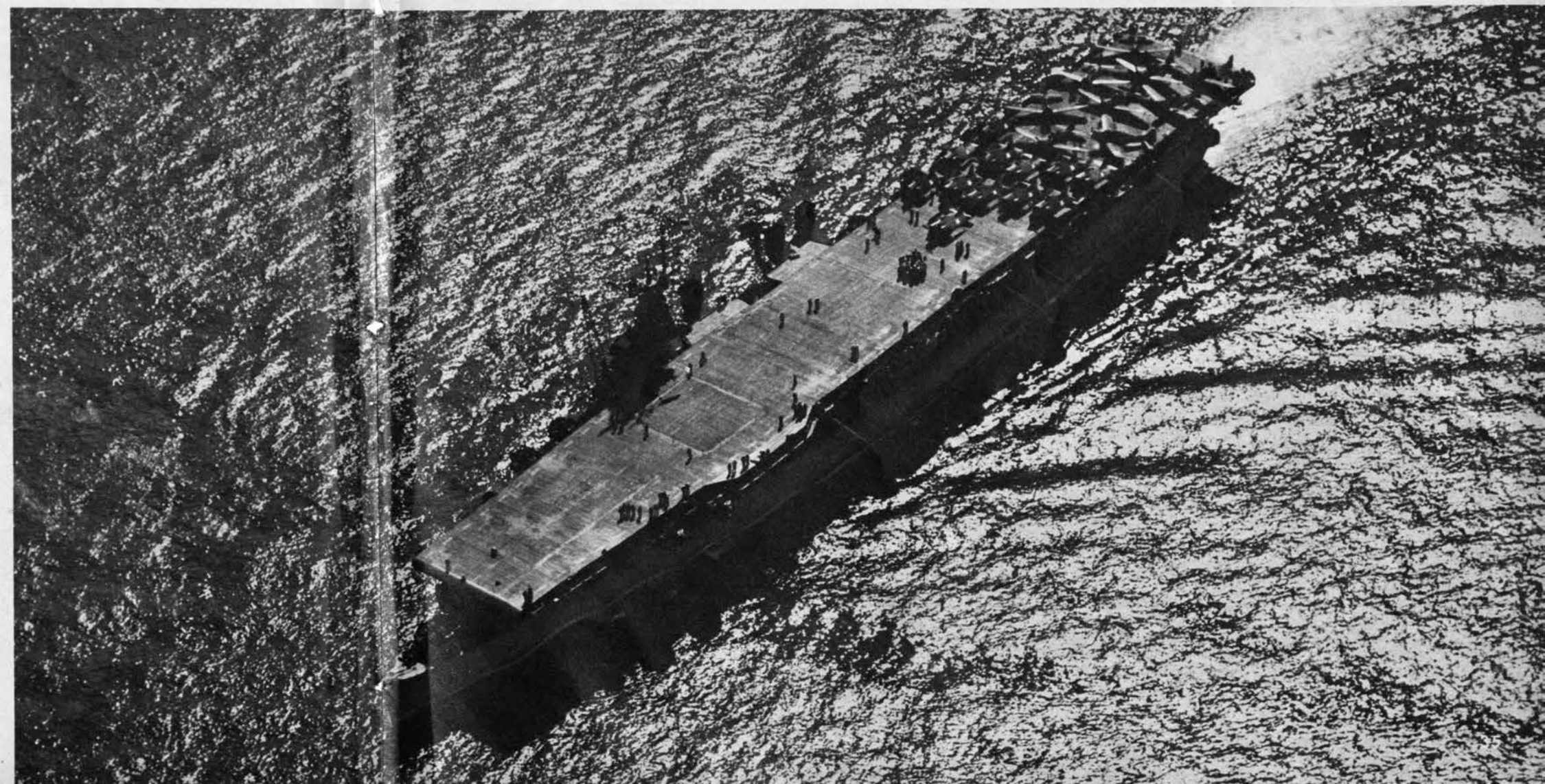


SUPPLEMENTING OUR CV'S are the nine CVL's of Independence Class (above, below). Their hulls retain the long lines of

the cruisers for which they were originally designed, though their flight decks have somewhat the proportions of the smaller CVE's.

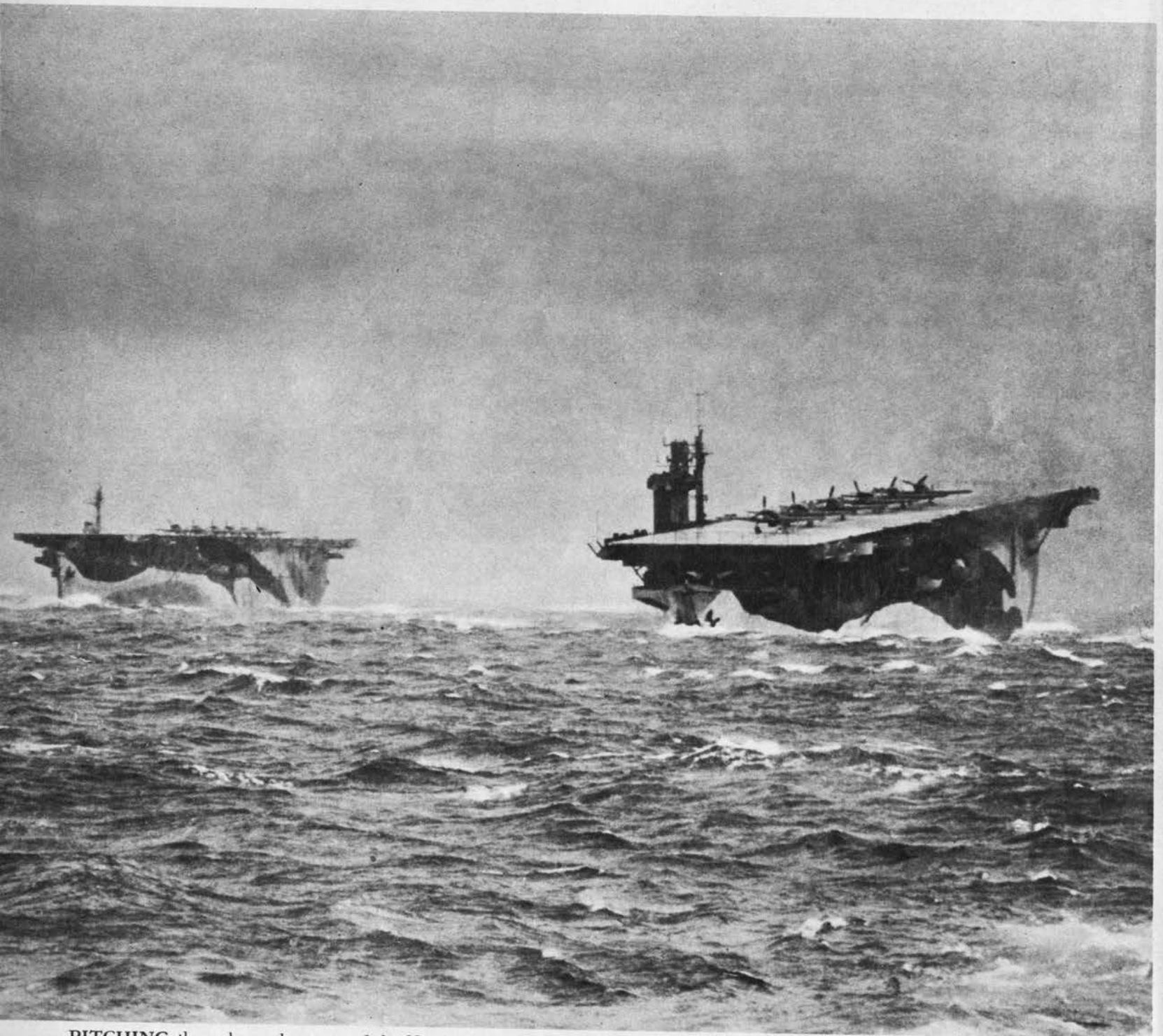
Their stack pattern is unique, four projecting from the starboard side just aft of the small island. Independence Class ships will

be seen as part of major task forces and may often be found in company with Essexes as in the picture above, or other large carriers.





# ESCORT CARRIERS ARE WARTIME EXPEDIENT

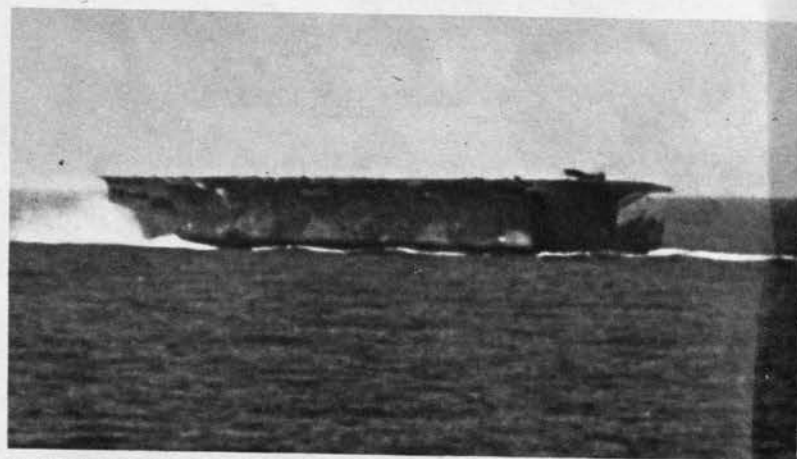


**PITCHING** through rough waters of the North Atlantic, two baby flattops patrol for U-boats. This fine photograph shows the hazards of carrier operation in heavy seas and one of the limitations of such

small converted craft. Both of the vessels in this picture are American-built, British-operated carriers. That on the left resembles the Long Island; that on the right the Charger (note superstructure).



**FAT, BROAD DECK** is characteristic of most CVE's. Bogue Class (above) has small island forward, two gun sponsons aft, walkways at weather deck. Size is shown by three Avengers aligned across deck.



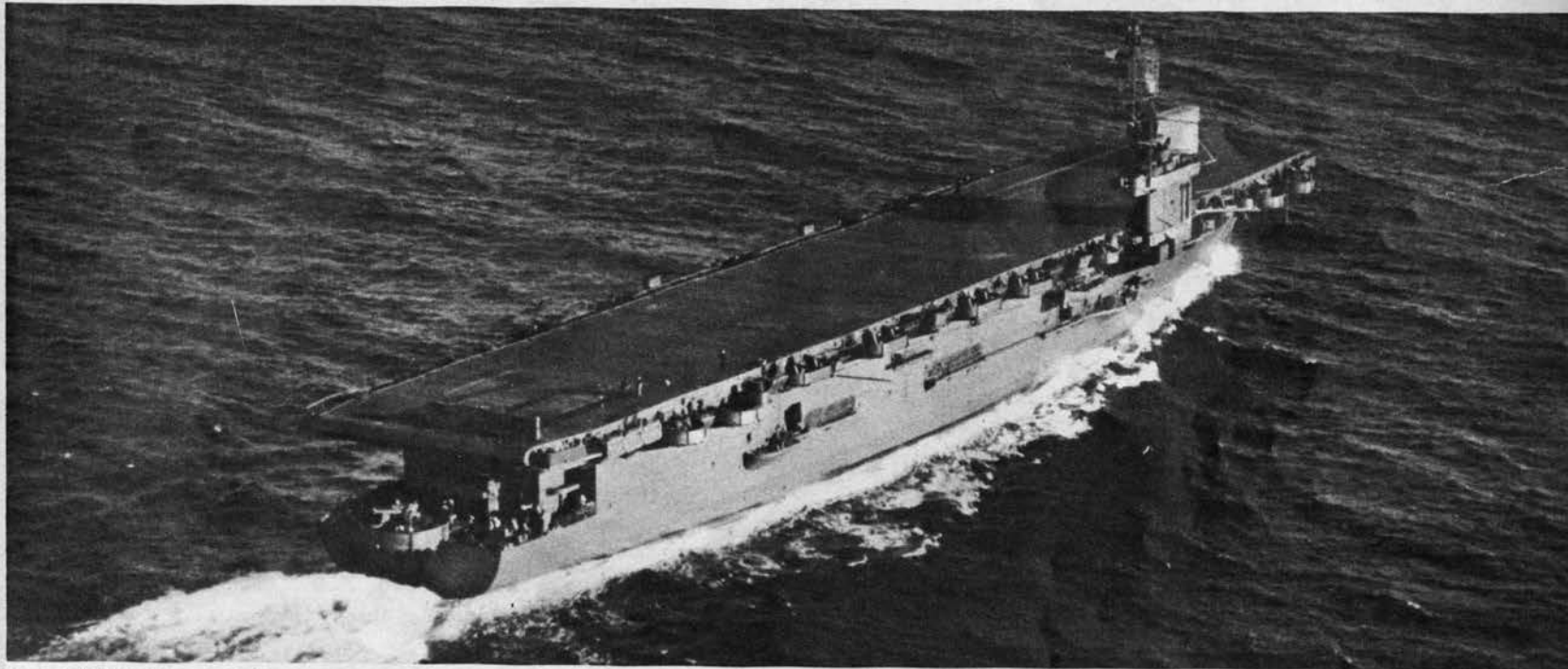
**H.M.S. ARGUS** is the only Allied carrier with no superstructure above the flight deck, though Long Islands have only a radio mast. Argus, like other British carriers, has no overhang on her flight deck.





**SANGAMON CLASS CVE'S** are the longest of our escort carriers. They are converted oilers and still have sufficient fuel capacity to serve as supplementary fleet oilers. The island structure is very

small in contrast to the deck length. This, plus the slight hull projections forward and aft, is the best clue to their identity. The general impression is of a bigger ship than the Bogues or the Casablanças.



**MOST NUMEROUS** design in our CVE fleet is the Kaiser-built Casablanca. For recognition purposes, they are almost identical with the Bogues but their twin screws give them somewhat better per-

formance. Most significant difference is bobtail cruiser stern with its single gun sponson. Like the other wartime conversions, the Casablanças have a small cantilever island well forward on a rectangular deck.



**H.M.S. ACTIVITY** is a single British merchant conversion. She closely resembles rest of the pack but has a typically British flight deck integral with hull and having curved fore and aft deck edges.

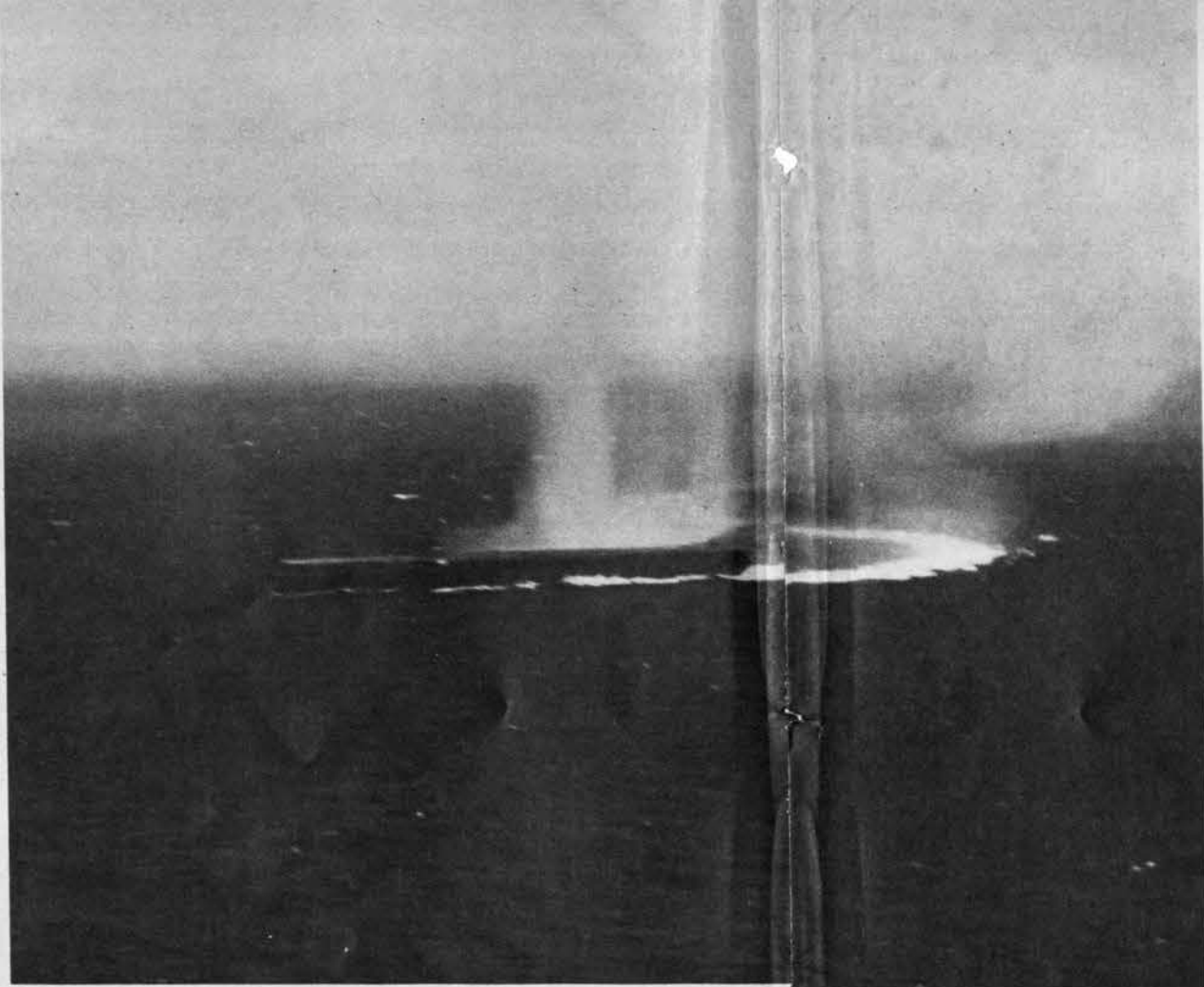


**H.M.S. UNICORN** is also a unique ship. A merchant conversion, she looks very much like the bigger British carriers. Her large British-style island is placed well forward and contrasts with her short deck.





ZUIHO CLASS (top) and Chitose Class carriers (bottom) are evidently being used as plane ferries. Note the cluttered decks. The Chitoses, originally seaplane tenders, were converted to CVL's in 1943.



UNDER ATTACK IN CORAL SEA, SHOKAKU LOOKS LONG AND LOW.



NOTE THE NARROW FLIGHT DECK

IN THIS FORESHORTENED VIEW, SHOKAKU CLOSELY RESEMBLES THE U. S. CVE'S AND CVL'S

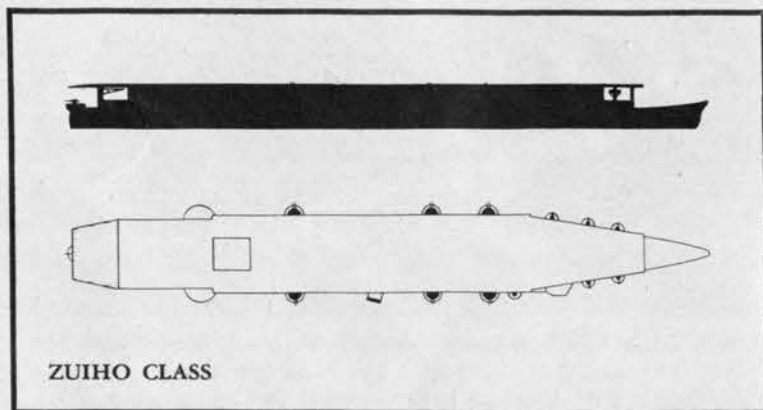
## JAP CV'S COME

Through October 1942 the Japanese had proved themselves good carrier men. They handled their ships skilfully and with great imagination. Co-ordination between their recon and attack aircraft was amazingly well developed.

But for the last two years the Jap carrier fleet has been playing it cozy. Until the recent battle off Saipan no Japanese carrier had been seen in fleet action, not even in defensive operations. Having lost seven carriers and had four badly damaged, the Japanese threw their entire reliance on their land-based aircraft, used their carriers merely as supply ships to ferry in planes to replace those blasted by U. S. forces.

Though hard hit, the ships remaining to the Japanese, plus their new construction, form a threatening fleet in being. The Shokakus have repeatedly proved themselves to be fast, sturdy and efficient craft. Hayataka Class ships are still good fleet weapons.

Because of the nature of Japanese carrier construction, their ships do not break down to identical ships in large classes. A

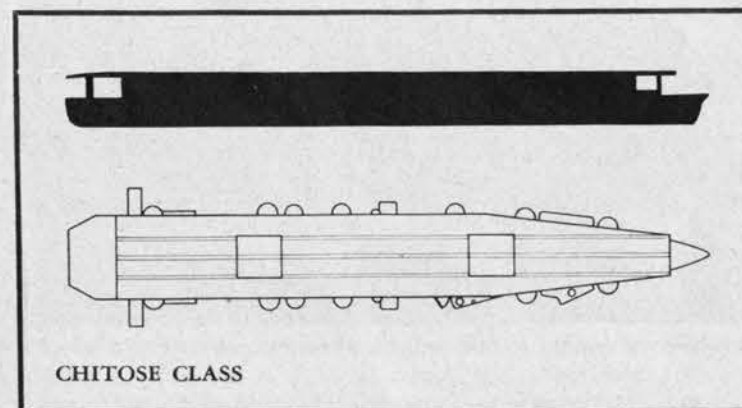


ZUIHO CLASS

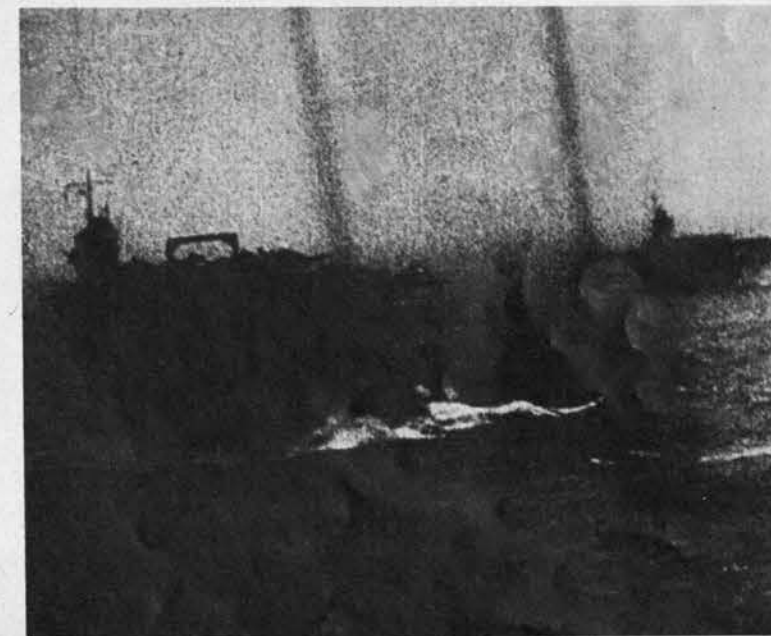
## OUT TO FIGHT

large proportion of them are conversions of warship and merchant hulls. Their keel-up construction has been limited to classes of two or three units each. Though both fleet and escort types are generally similar within each class, each ship has distinctive features. The pictures on these and the following two pages should, then, be regarded as typical rather than as specific for large numbers of ships.

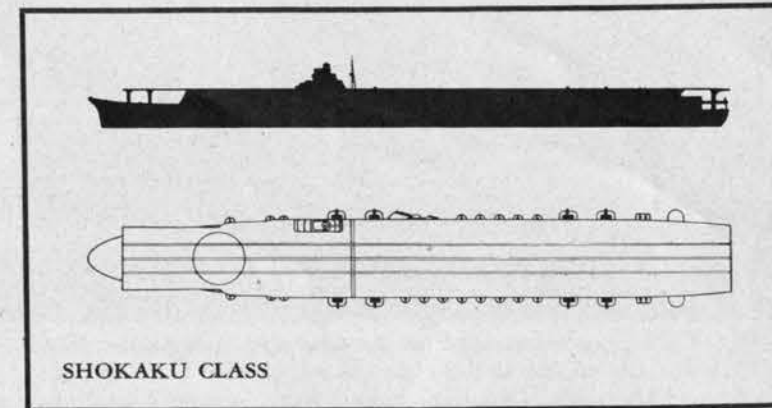
Fortunately, however, Japanese ships have pronounced national characteristics. The Japs like clean flight decks. Smoke pipes are always carried through the carriers' sides, eliminating stacks above decks at the expense of space below. By usually placing the bridge below the forward edge of the deck they reduce or eliminate islands. Only aircraft carriers of the Hayataka Class have large islands. The flight decks on most ships taper forward and are beveled aft. The signal platforms jut out from the after end of the flight deck, the sides of which are relatively less indented than those of American and British ships.



CHITOSE CLASS



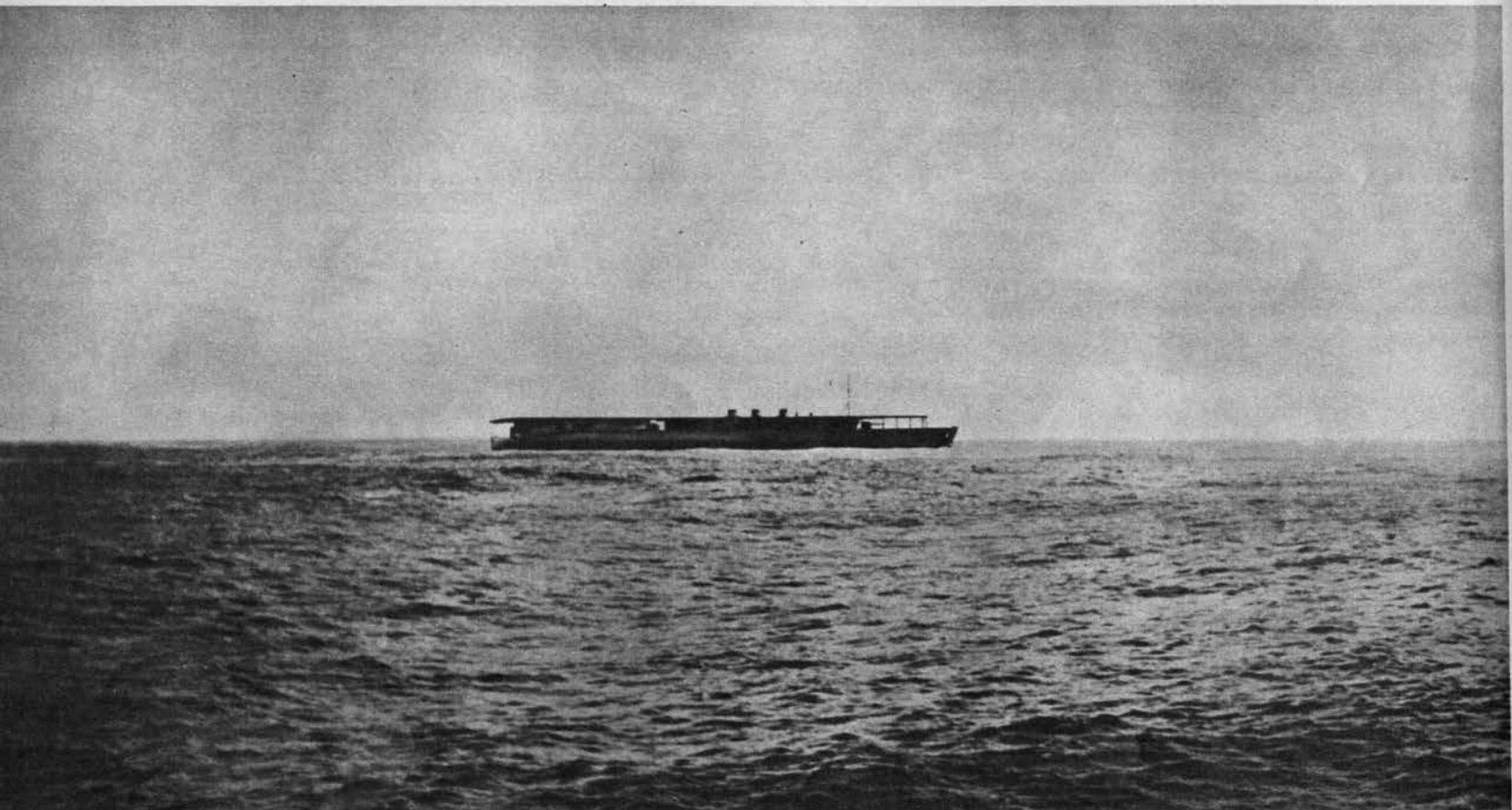
HEAD-ON, these two Shokakus show small starboard islands. When seen from overhead or abeam, contrast in size between hull and island of the Shokaku Class is more marked than in our baby flattops.



SHOKAKU CLASS

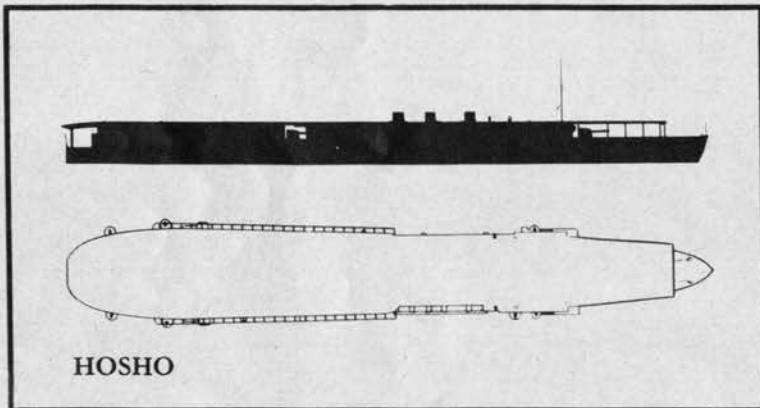


# JAP ESCORTS FERRY PLANES TO ISLAND BASES,

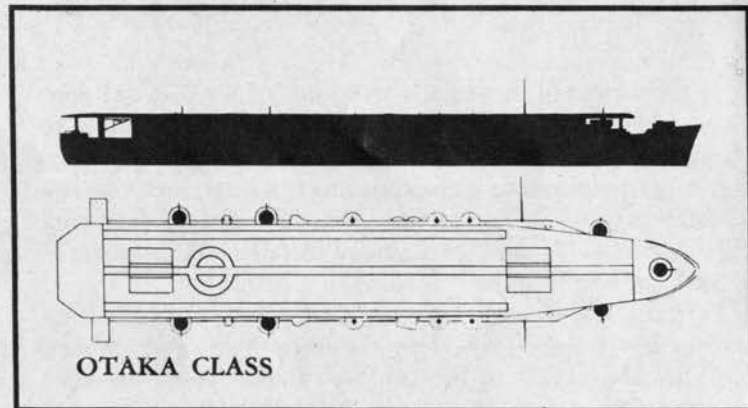


**JAPAN'S OLDEST CARRIER** is the Hoshō, one of the first keel-up carriers ever built (1922). The most recent reports indicate that her age and small size have relegated her to supplementary service as a

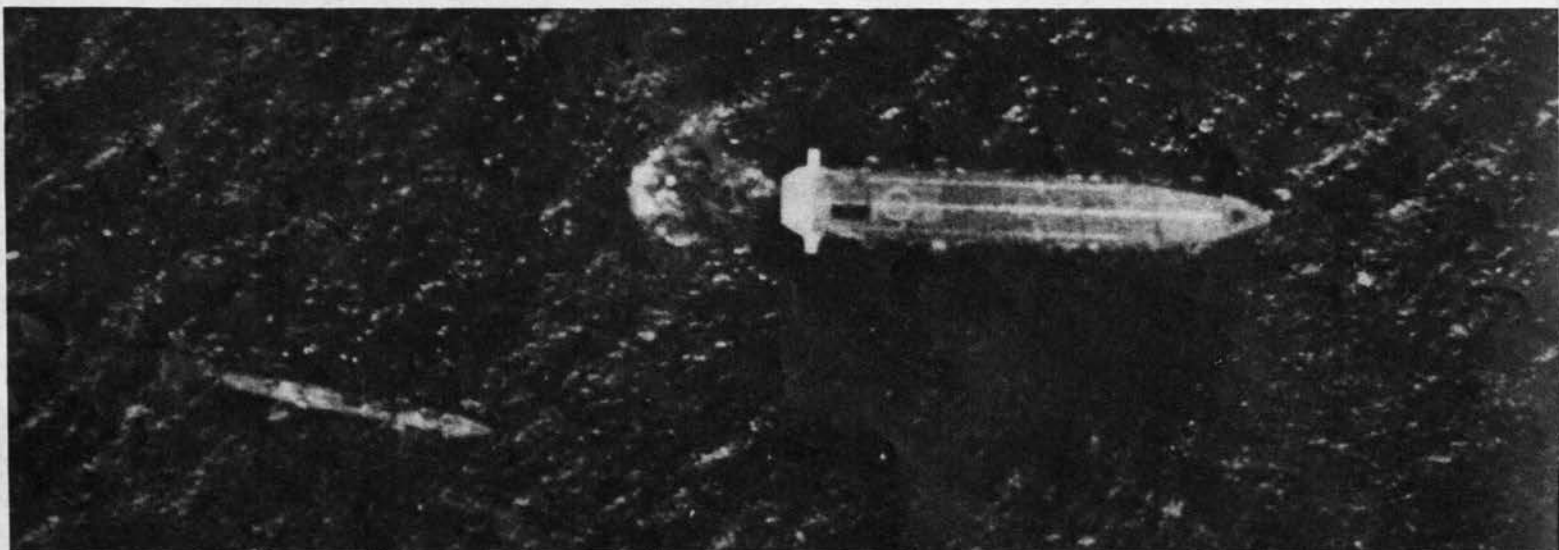
training carrier. She has three short stacks just forward of amidships and no island. Her uniquely shaped flight deck is smoothly rounded at the aft end and tapers to little more than hull width at the bow.



HOSHO



OTAKA CLASS

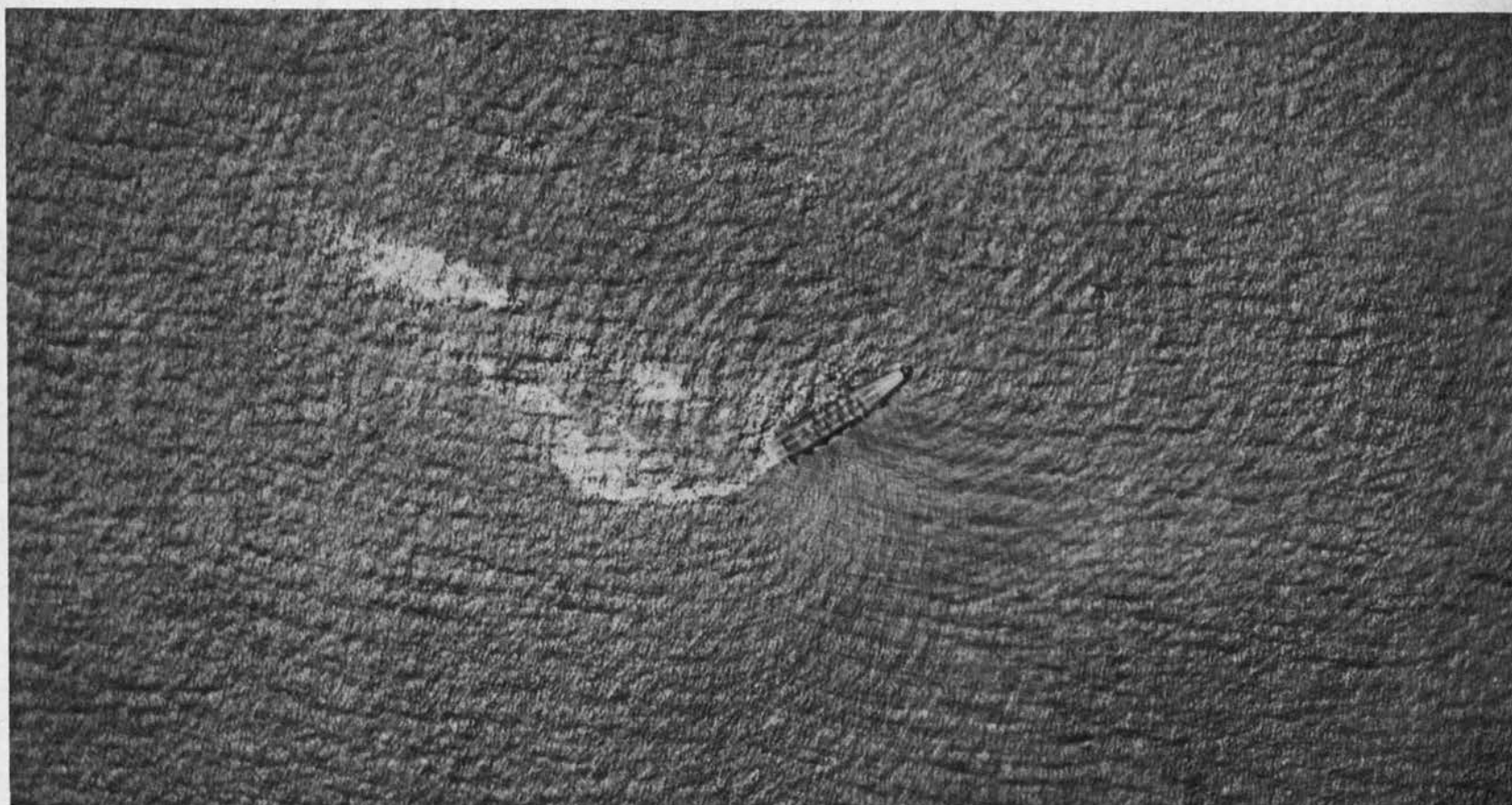


**CVE OTAKA** was converted from the passenger liner Kasuga Maru in 1941. The second ship in this class was completed a year later. It is a wartime conversion of the liner Yawata Maru, renamed the Unyō.

Both liners displaced 16,600 tons in peacetime, so the Unyō may be about the same size as the Otaka, although it may differ in detail. The control platforms at the fantail are a distinctive Japanese feature.

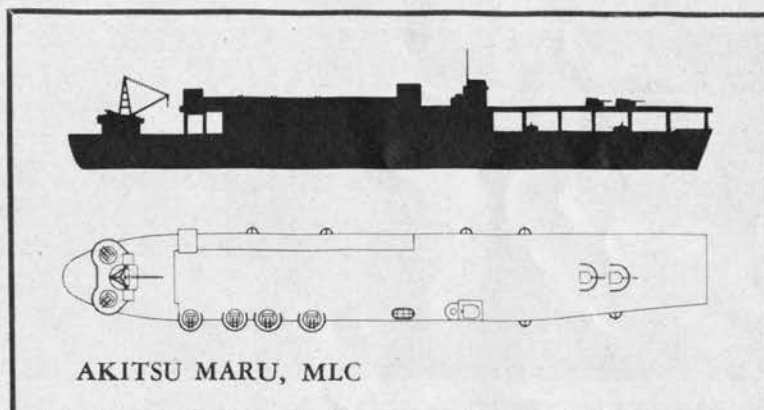
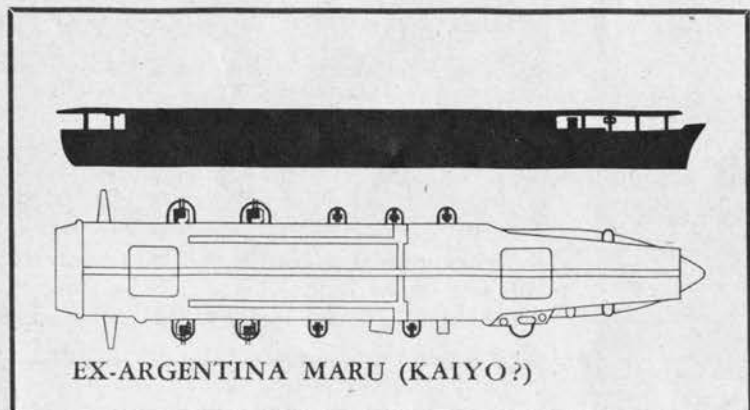


# KEEP JAPAN IN BATTLE FOR THE PACIFIC



PROBABLY CALLED **KAIYO** by the Japanese, this ship is one of the newest Jap CVE's. Completed in 1943, it is a conversion of the liner Argentina Maru built just before the war for South American

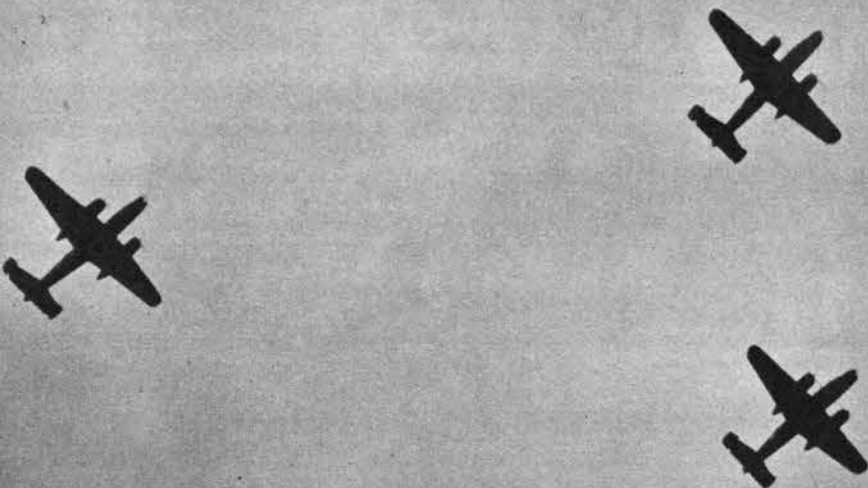
trade. Like Otaka class she has the new Jap feature of control platforms built out from her fantail. Her flight deck plan might cause confusion with U. S. CVE's, but note particularly the long taper at forward end.



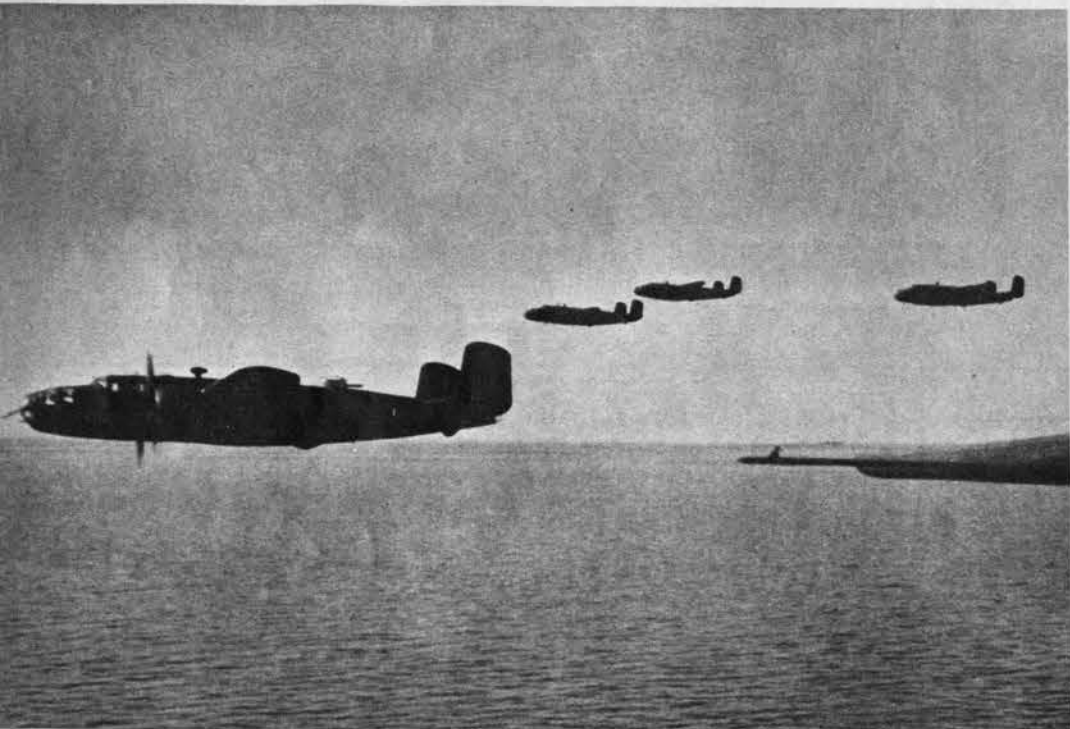
**AKITSU MARU** (*center*) was built originally as an escort carrier, but in operation it proved to be too small. It was then converted into an MLC (Landing Craft Carrier) and was used to transport these small

craft, barges, and other bulky equipment. In distant overhead views, the Akitsu Maru bears a striking resemblance to a CV. The afterdeck has been cut away, however, and a boat crane mounted on the stern.





Clearly outlined against the sky, three Mitchell bombers reveal smooth taper of the wing and fuselage, two protruding engine nacelles, cutouts in wide squared-off stabilizer. The newest models of this rugged medium are the heaviest armed planes in the world today.



Wide-set fins and rudders on the B-25 are visible from nearly every angle. On B-25H and J (see June Journal) dorsal turret has been moved forward to straddle leading edge of wing. Below, a B-25 leaves the deck of the carrier Hornet on its way to bomb Tokyo.



# MITCHELL

## Two famous Pacific bombers

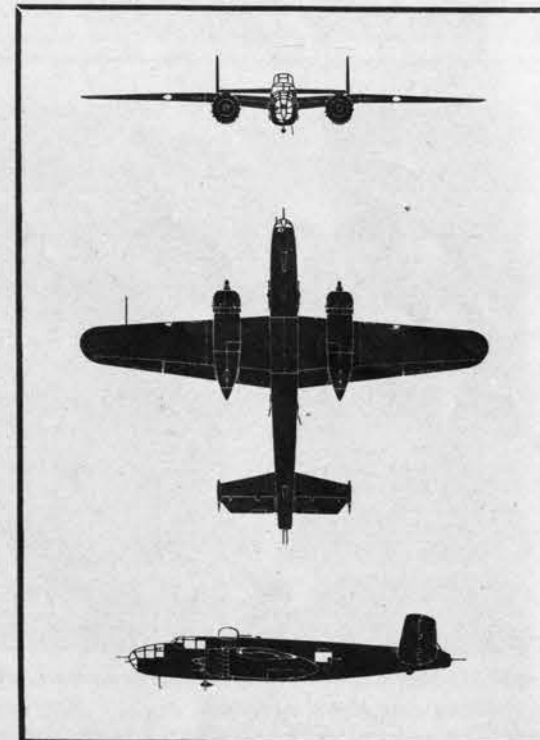
The two medium bombers shown on these pages are famed for scoring spectacular "firsts." The U. S. Army's B-25 (left) was the first Army plane to sink an enemy submarine, the first U.S. plane to bomb Tokyo, and the first medium to mount a 75-mm. cannon. The Mitsubishi bomber Nell, in addition to being the first Jap plane to fly around the world, scored heavily in conquest of the Philippines and East Indies, capped this performance by helping to sink the Repulse and Prince of Wales in high-level and torpedo attack.

Consistently good performers in the Pacific area, these two planes have several general recognition characteristics in common that at first glance might lead to confusion, but close scrutiny will show that their differences far outweigh their similarities.

Nell is the third-biggest operational land-based bomber in the Jap stable. Its 82-ft. wing is longer than that of any U. S. medium bomber; both wing and tailplane are angular and have the same sharp cut-back on the



A flying arsenal in deed as well as in word, the Mitchell carries its bulk gracefully on its gull-shaped wing. The silhouette (below) is J model.



# VS. NELL

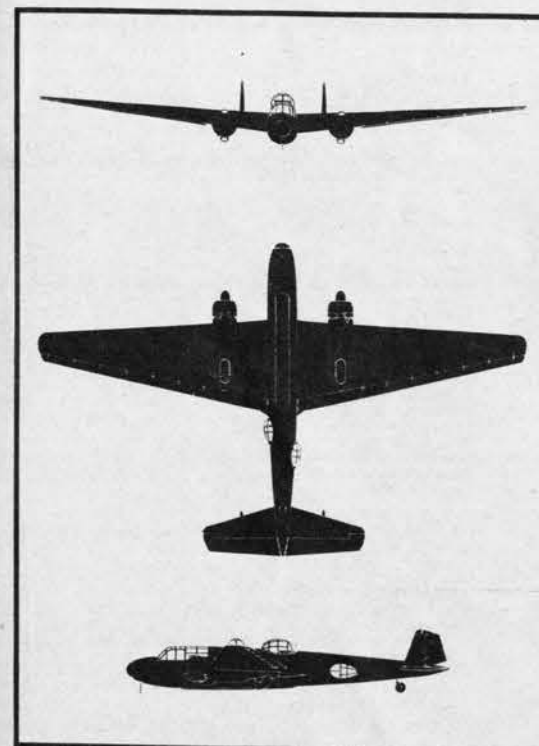
## are distinctly different in detail

trailing edges that is so marked on Nell's bigger sister Betty. Pronounced taper of wing and tailplane is in direct reverse. The Mitchell's wing measures 67 ft., 6 in. and tapers evenly to rounded tips. Engine nacelles protrude noticeably. Tailplane is almost rectangular with small sharp cutouts on trailing edge. Both planes have 54-ft. fuselages, but Nell's is more slender, broken by unevenly set side blisters. The G and H models of the B-25 which carry the 9½-ft., 75-mm. cannon are 2 ft., 2 in. shorter than other models, the glassed-in nose being replaced by a solid heavier-armed version.

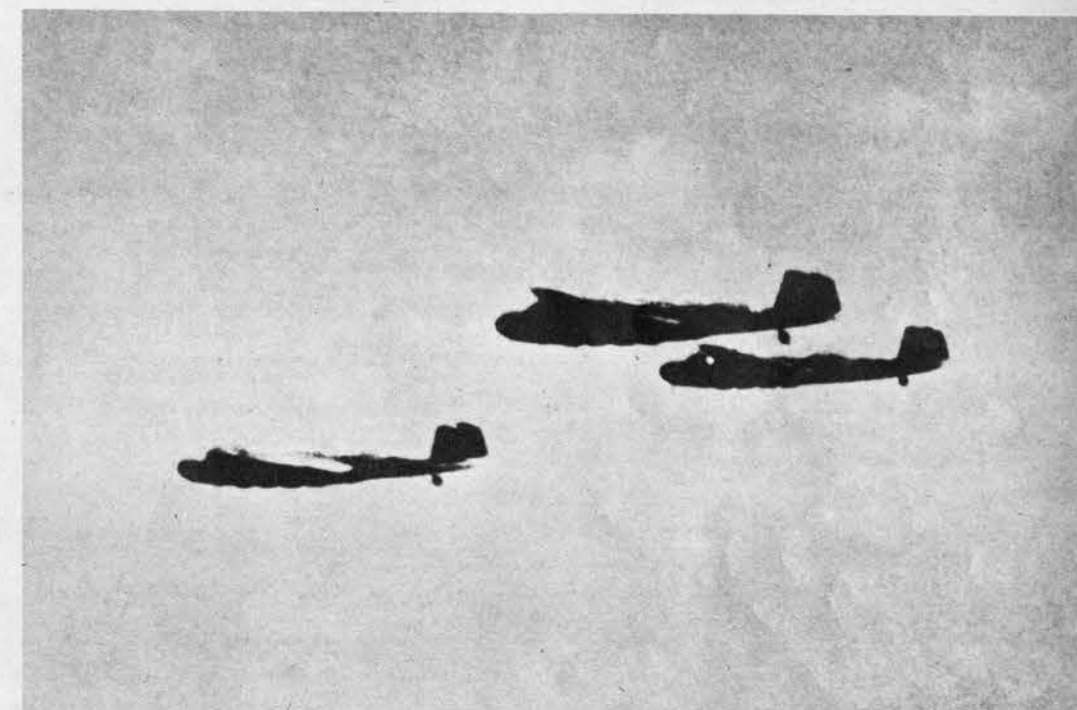
Head-on Nell's wing shows its strong dihedral from root to wingtip, in marked contrast to the B-25's distinguishable gull-wing appearance. Nell's angular fins and rudders are set halfway between its fuselage and the tips of its wide flat tailplane; Mitchell's slab-sided rectangular fins and rudders are set completely outside the tailplane, show up clearly in quartering as well as head-on views.



Wing dihedral, straight flat tailplane and non-retractable tailwheel are visible on Nell (above). As on the B-25, its two engines are underslung.



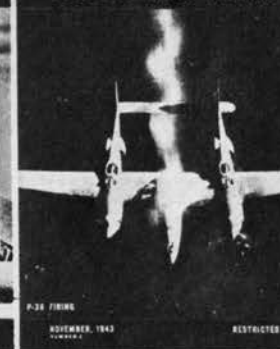
Three Nells cross Pacific skies. Nell is known to have Junkers-type flaps and ailerons (see silhouette), and it is believed to have been modeled after the German Ju-86. A transport version of this plane called the "Nippon" made a flight around the world in 1939.



Nell's close-set fins and rudders sometimes appear as one in distant views, are not as quickly visible as B-25's. Fuselage is broken at top by huge blister housing 20-mm. cannon set above trailing edge of wing. Angular wing, tailplane show clearly in picture below.







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vehicles are listed under military designations; merchant ships by name or type; warships by individual names, class names or designations. For each item, the issue number is indicated by months—S, O, N, D, Ja, F, Mr, Ap, My, Je, Jy, Ag—; the page by its proper number.

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 Cleveland Class, U.S. CL, S 27; Ja 48; Mr 7; Ap 44; Jy 51; Ag 2  
 Codrington Class, Br. DD, D 27; My 34  
 Colombo, Br. AA ship, Ap 20  
 Colorado Class, U.S. BB, S 13, 26; Jy 48  
 Converted Trawlers, Ja 27  
 Cotillon, Br. Trawler, Ap 18  
 Cree, U.S. AT, Ja 37  
 Cumberland, Br. CA, N 23; D 26  
 Dance Class, Br. Trawler, Ap 18  
 Dardo Class, It. DD, My 38  
 DE, U.S., long hull, S 27; Ja 26  
 DE, U.S., short hull, S 27; Ja 26  
 Devonshire Class, Br. CA, N 23; D 26  
 Dida Class, Br. CL, D 27  
 DM-DMS, Ja 34  
 Dragon Class, Br. CL, D 27  
 Duke of York, Br. BB, D 30, 31

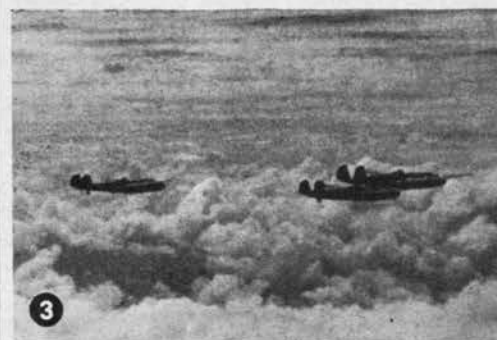
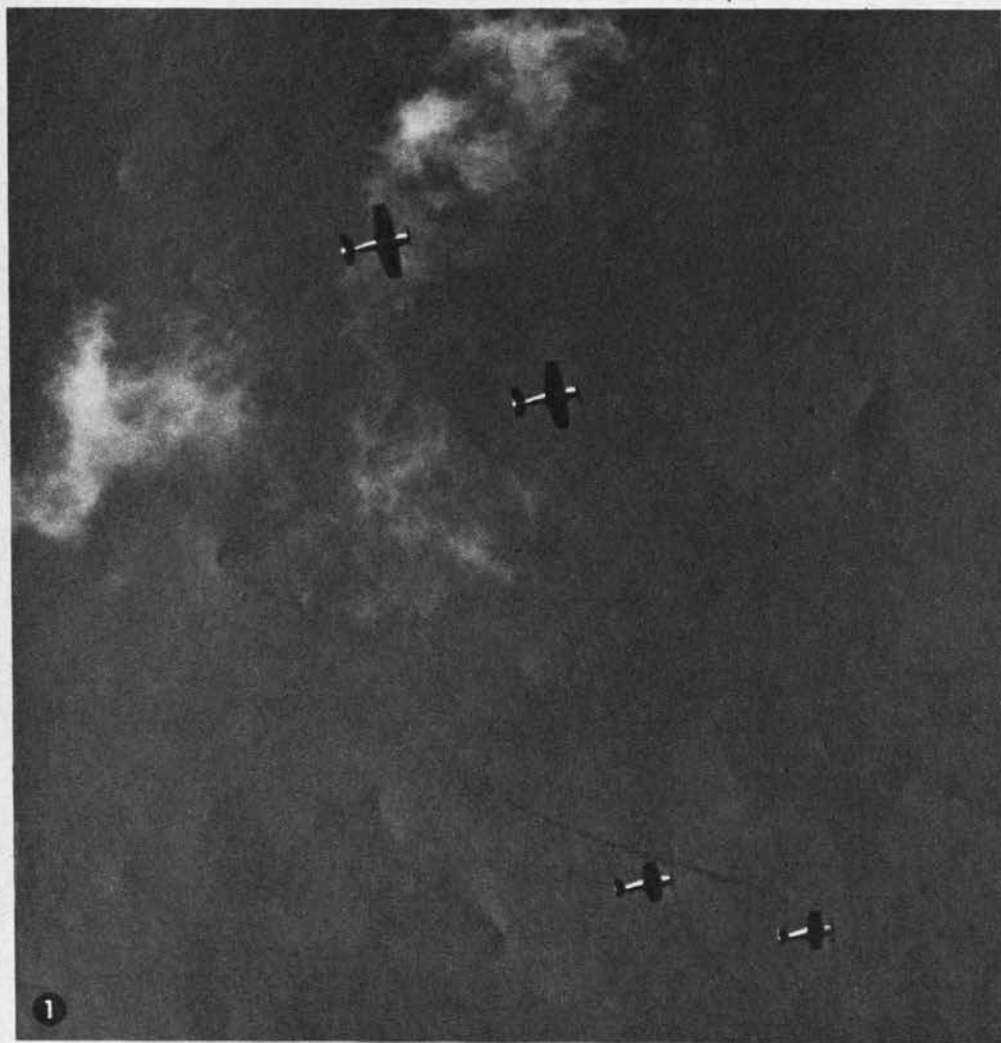
## DUKW, F 35

Elan Class, Ger. PG, F 27  
 Elbing Class, Ger. DD, F 27  
 Emden, Ger. CL, F 27  
 Emerald Class, Br. CL, D 27  
 Enterprise, U.S. CV, S 26; O 48; Ja 48; Je 2; Ag 2, 34  
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 Essex Class, U.S. CV, S 16, 26; O 48; Mr 7; Ap 44; Jy 51; Ag 1, 2, 32-35  
 Evaris Class, U.S. DE, Ja 26  
 Ex-Argentina Maru, Jap CVE, O 26; Ag 41  
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 Fantasque Class, Fr. DD, D 7; My 39  
 Farragut Class, U.S. DD, S 27; N 26, 27; Mr 7; My 40  
 Fiji, Uganda, Br. CL, D 27  
 Fishguard, Br. Sloop, Ap 12  
 Fletcher Class, U.S. DD, S 27; N 26, 27; Ja 48; F 33; Mr 7; My 46; Je 2; Jy 51; Ag 2  
 Floating Dry Dock, U.S., Ag 10, 11  
 Flower Class, Br. Corvette, Ap 14  
 Flush-deckers, S 27; N 26, 27; Mr 7  
 Flusser, U.S. DD, My 31  
 Formidable, Br. CV, D 33  
 Friesland, Ger. AVC, F 27  
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 Furious, Br. CV, O 48; D 26, 32; Ag 34  
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 Fury, Br. DD, My 34  
 Fuso Class, Jap BB, O 26, 28  
 Gamble Class, U.S. DM-DMS, Ja 26  
 Glenmore, Br. AA ship, Ap 20  
 Gneisenau, Ger. BB, S 49; F 26  
 Godavari, Br. Sloop, Ap 12  
 Gordi Class, U.S.S.R. DD, My 38  
 Gridley-Bagley Class, U.S. DD, S 27; Ja 48; My 42, 43  
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 Gunboat, Ger., F 27  
 Halcyon, Br. AM, Ap 17  
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 Hatsuharu Class, Jap DD, O 27, 36; My 48  
 Hatsukori, Jap TB, Ag 22  
 Havock, Br. TB-destroyer, My 30  
 Hawkins Class, Br. CA, N 23; D 26  
 Hayataka Class, Jap CV, Ag 38  
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 Herald, U.S. AM, Ja 36  
 Hibiki Group, Jap DD, O 36; My 48  
 Hibiscus, Br. Corvette, Ap 14  
 Habart, Br. CL, D 27  
 Harnet, U.S. CV, S 28  
 Hanzo, Jap CVL, O 26, 31, 48; Ag 40  
 Hunt Class, Br. DD, D 27; Ag 48  
 Illustrious Class, Br. CV, O 48; D 26, 33; F 33; Je 2; Ag 32, 33, 34  
 Inazuma, Jap DD, O 36  
 Independence Class, U.S. CVL, S 17, 26; O 48; Ja 48; Mr 7; Ag 2, 34, 35  
 Indiana, U.S. BB, S 15  
 Indianapolis, U.S. CA, Mr 4; Je 2  
 Indomitable, Br. CV, D 33  
 Inglefield, Br. DD, My 34  
 Insect Class, Br. Gunboat, Ap 22  
 Intrepid, Br. DD, My 34  
 Iowa Class, U.S. BB, S 15, 26, 49  
 Ise Class, Jap BB, O 26, 28; Ap 44  
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 J, K and M Class, Br. DD, D 27  
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 Kasuga Maru, see Oraka  
 Katari Class, Jap CL, O 27, 35  
 Kent-Devonshire-Norfolk Class, Br. CA, D 26; Ap 44  
 King George Class, Br. BB, S 49; D 26, 31; F 33; Ap 44  
 Kite, Br. Sloop, Ap 12  
 Köln, Ger. CL, F 27  
 Kongo Class, Jap BB, S 49; O 26, 28, 29; F 33  
 Kuma Class, Jap CL, O 27, 35; Je 2  
 Kumano, Jap CA, O 32  
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 Laurel Class, Br. DD, My 30  
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 LCI, U.S., Ja 48; F 33, 39, 42  
 LCM, U.S., F 1, 38, 39, 45  
 LCP, Br., F 37, 38, 45, 46  
 LCPR, U.S., F 45  
 LCR, U.S., F 45  
 LCS, U.S., F 47  
 LCT, U.S., F 44; Ag 10, 11  
 LCV, U.S., F 34, 39  
 LCVF, U.S., F 35, 42, 45  
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 Leipzig, Ger. CL, F 27  
 Leningrad Class, U.S.S.R. DD, My 38  
 Leopard, Fr. DD, D 7  
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 Long Island, U.S. CVE, S 26; Ag 36  
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 Mizuho Class, Jap CVS, O 26, 30  
 Maffett, U.S. DD, My 41  
 Mogami Class, Jap CA, O 25, 27; N 25; Ja 4, 5  
 Mami-Wakatake Class, Jap DD, O 37; My 48  
 Mantalcan, Fr. CL, D 6  
 Möwe Class, Ger. TB, F 23, 27  
 Mutsuki Class, Jap DD, O 27, 37; Ap 44; My 48  
 Nachi Class, Jap CA, O 27, 33; N 24; Jy 24  
 Nagato Class, Jap BB, O 26, 29  
 Narvik Class, Ger. DD, F 22, 27; My 39  
 Natori Class, Jap CL, O 27, 34; Ja 4, 5  
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 New Orleans Class, U.S. CA, S 27; N 22; F 33; Ap 44; Jy 51  
 New York, U.S. BB, S 26, 49  
 North Carolina Class, U.S. BB, S 14, 26; Mr 7; Ap 44; Je 2, 3; Jy 51; Ag 2  
 Northampton Class, U.S. CA, S 27; N 21, 26, 27; Ja 48; Mr 5; Je 24  
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 Nürnberg, Ger. CL, F 26  
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 Plunkett, U.S. DD, My 44  
 Porter Class, U.S. DD, S 27; Ja 2; My 41; Jy 51; Ag 16  
 Portland Class, U.S. CA, S 27, 50; N 22; Ja 48; Mr 4, 7; Je 2, 24; Ag 2  
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 Samers Class, U.S. DD, S 27; My 41  
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 Tirpitz, Ger. BB, S 49; F 26; Je 2  
 Tjerk Hiddes Class, Ger. DD, F 27  
 Tone Class, Jap CA, O 26, 32; N 25; Ja 4, 5; F 33  
 Town Class, Br. DD, D 27  
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 Vansittart, Br. DD, My 33  
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 WHY THEY FLY, Ap 3-5



# QUIZ NO. 3: WARPLANES IN THE WEST



For answers, see p. 48



# NEWS & MISCELLANY

## NEWS

German "human torpedoes" attempted an attack on the Anzio anchorage during April. The craft consisted of two standard 21-in. German torpedoes secured together, one complete with war head, the other with a control room in lieu of the war head. The hatch in which the operator sat is covered by a dome of glass or transparent plastic composition. The explosive torpedo was carried below the control torpedo and was released to proceed under its own propulsion to the target. The operator then attempted to return to his parent ship.

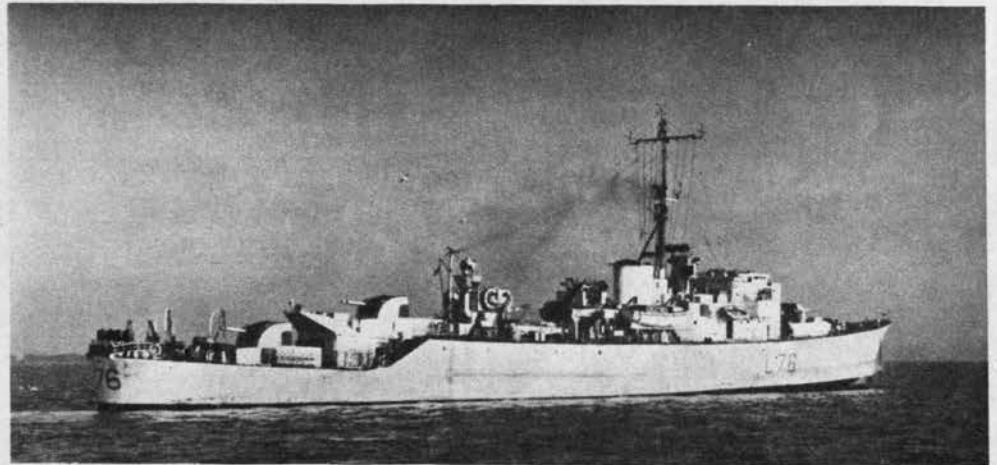
Question has been raised concerning the identification of picture No. 2 in Quiz No. 1 of the June issue of the *Recognition Journal*. The quiz answers designate this ship as the Improved Southampton while the center spread of the December issue lists it as the Belfast. The Belfast, which was completed in 1938, is a modification of the Southampton Class (six ships in the class), which was completed in 1936-37. Obviously the boiler arrangement is different and there is a difference in length between the Belfast (614 ft. OAL) and the six Southamptons (592 ft. OAL). Both designations are correct. Improved Southampton is the class name that has been assigned by the British. From a recognition point of view where there is only one ship in the class it has been the practice to use the ship name.

The weight of the new type torpedo bomber, Jill, with normal load has been calculated at approximately 12,000 lb. Maximum speed with bombs or torpedo has been estimated as 260 m.p.h. at sea level and a maximum range of over 1,500 miles.

In the European theater a fighter-bomber version of the Mosquito is now carrying a 500-lb. bomb under each wing (or alternately long-range tanks) in addition to a 1,000-lb. bomb load inside the fuselage and full fighter armament.

B-26 Marauders are now in service with the Navy as utility transports and target towers. As such they are designated JM-1 and have a plastic nose and no top turret.

Armor plate has been found for the first time on a Lily. A piece was placed at a 30° angle in the rear fuselage behind the radio operator and gunner. The back of the pilot was protected as well as the floor beneath him. In addition, armor plate was placed forward of the instrument panel.



FOURTH GROUP OF ROYAL NAVY'S HUNT CLASS HAS HIGH-FREEBOARD HULL, LONG UPPER DECK

The maximum armament found so far on a Betty has been 4 x 7.7-mm. machine guns in the nose, dorsal and lateral positions, and one 20-mm. cannon in the tail. Although it has not been confirmed by actual inspection it is believed that a 20-mm. cannon is mounted in the dorsal position as well as in the tail.

A recent oblique photograph of a unit of the Terutsuki Class has revealed more up-to-date data on the class. The overall length formerly carried as 405 ft. is now estimated as 435 ft. Its beam is 38 ft. The general silhouette of the class has not been altered appreciably from the recognition standpoint. The trunked stack is not raked as first shown and the bridge is smaller. The disposition of the elements remains the same, with the exception of the AA platforms which have been added abreast the stack.

A fourth group has been added to the Royal Navy's Hunt Class of fleet destroyers (see cut). Most important recognition feature is the high-freeboard hull with the upper deck being carried aft for about three-fourths of the ship's length. A graceful sheer marks the upper deckline as it sweeps forward to the clipper bow. The bridge is long and high, carries aft nearly to the low, broad upright stack. Just forward of the stack is an upright tripod foremast. Heavily armed, these newest Hunts have one twin-shield mount on the forecandle and two others in super-firing positions at the break in the upper deck. Triple torpedo-tube mount is situated amidships. With their deckline break forward of the stack, ships of this fourth group show some resemblance to Bittern and Black Swan sloop classes.

## CORRECTION

In the July *Journal*, page 20, the tank in the picture at left center is an M-3A1, not an M-5.

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## QUIZ ANSWERS

### QUIZ No. 1

1. L to R: Brooklyn Class CL; DD's (2); Cleveland Class CL
2. L to R: Independence Class CVL; North Carolina Class BB; Essex Class CV; Independence Class CVL
3. Fletcher Class DD (2)
4. L to R: Tanker; South Dakota Class BB's (2); Independence Class CVL; Fletcher Class DD
5. L to R: South Dakota Class BB; Independence Class CVL; Enterprise CV; DD, possibly Fletcher Class; Portland Class CA; Independence Class CVL; South Dakota Class BB

### QUIZ No. 2

1. FW-190
2. B-25
3. Sally
4. Ju-88
5. Oscar
6. Me-109
7. Do-217
8. Oscar
9. Nell
10. Lily
11. Me-109
12. Spitfire
13. Sally
14. Dinah
15. Betty

### QUIZ No. 3

1. F6F
2. SB2C
3. Nell
4. SBD
5. Zeke
6. P-39
7. OS2U
8. Sally Mark III
9. Dave
10. TBF
11. Val
12. PV-1
13. Sonia

### QUIZ No. 4

1. U.S. M-4's
2. British Churchill Tank
3. German Armored Half-Track
4. British Universal Carrier
5. German Armored Half-Track
6. U.S. Armored Car M-20
7. U.S. Light Armored Car M-8
8. British A.E.C. Armored Car
9. U.S. 155-mm. Gun Motor Carriage M-12
10. British Cromwell Tank
11. German PzKw IV Tank
12. German 76.2-mm. SP Gun
13. German PzKw V Tank

### QUIZ No. 5

1. Fi-156
2. SBD
3. Wellington
4. Hs-129
5. BV-138
6. Dinah
7. Nell
8. Typhoon
9. A-20
10. P-40
11. Helen
12. P-38
13. Beau- fighter
14. Cherry
15. Ju-86P

## CREDITS

The pictures used in the *Journal*, unless otherwise specified (see below), came from the Allied Armed Services.

- 2—Bot. right, J. R. Eyer-man
- 3—A. Leydenfrost
- 15—Top, Preslit
- 24—First row cen., Int., second row right, Int.; third row left, A.P.; fourth row cen., Int.; fifth row right, A.P.
- 25—Top, Robert Capa; bot. left, Carl Mydans

- 28—Top, Int.
  - 29—Top, Sovfoto; bot., Official British Photo from Acme
  - 30—Top, Int.; cen., Vladimir Musinov; bot. right, Acme
  - 31—Top, George Silk; bot. right, Int.
  - 36—Top, Int.
  - 42—Right cen., A.P.
  - 47—Fourth row cen., Bell Aircraft Corporation
  - 51—Top, Carl Mydans
- Abbreviations: A. P., Associated Press; Int., International



TORPEDO BOMBER



JAPAN



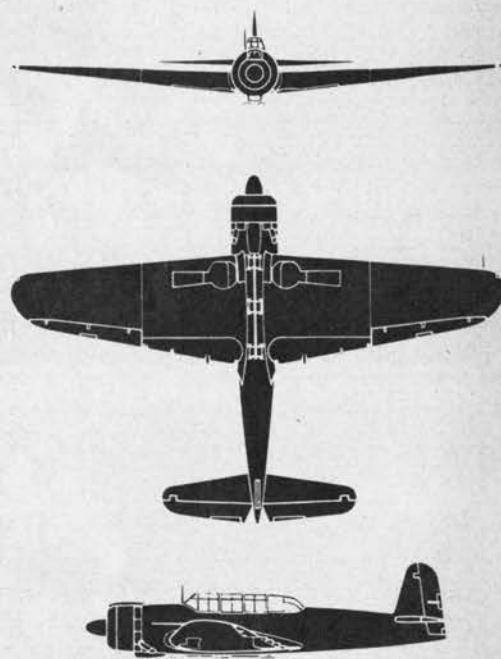
**DISTINGUISHING FEATURES:** Low-wing monoplane with single radial engine, prominent spinner. Wing is thin-skinned. It has heavy roots, tapered tips, a pronounced dihedral and typical Nakajima "butterfly" Fowler flaps. The fuselage, of light construction, is narrow at the tailplane, has a long greenhouse. The tall, tapering fin and rudder is rounded at the top.

**INTEREST:** Jill is the first captured Jap single-engine plane which has had a four-bladed propeller. Light in construction, even for a Jap, she is a better, faster torpedo bomber than Kate, with an engine that may be the biggest in Jap production. Sole armament found so far is a rifle caliber machine gun in the rear cockpit. Six bombs or one torpedo are carried externally.

JULY 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30  
NAVY DEPARTMENT BUAE 3

JILL, TYPE 2 (?) T/B



**SPAN:** 48 ft., 6 in.  
**LENGTH:** 35 ft.  
**APPROX. MAX. SPEED:** 329 m.p.h. in reconnaissance;  
310 m.p.h. with torpedo  
**SERVICE CEILING:** 35,400 ft. in reconnaissance;  
32,900 ft. with torpedo

**RESTRICTED**

**NOTE.** This page is to be cut along dotted lines (above and below), added to the proper nation's section in the Recognition Pictorial Manual. The dots indicate perforations.

TRANSPORT



U.K.



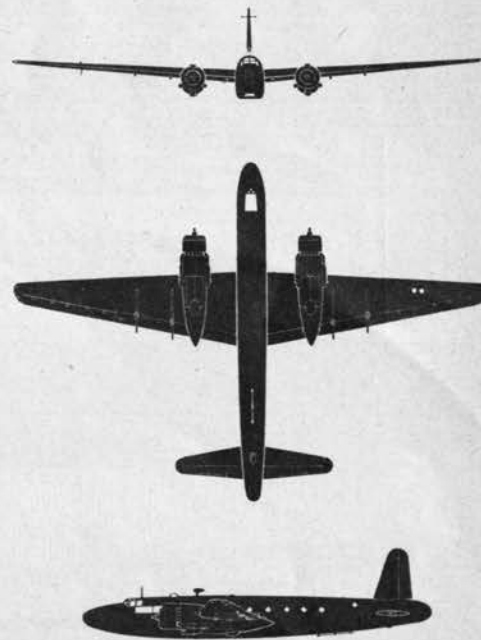
**DISTINGUISHING FEATURES:** Mid-wing monoplane with twin radial engines. Resembles the Wellington except for solid nose and tail and underslung engines whose nacelles break trailing edge of the wing. Wing has slight dihedral and exceptionally high aspect ratio. Deep heavy fuselage has elliptical nose and tail cone. Tall, boot-like fin and rudder is set in from tail.

**INTEREST:** The new RAF transport, Vickers-Armstrong's Warwick, is a fine looking plane. It is about ten feet longer than the Wellington and uses the same indestructible crosswoven geodetic construction. Warwick is exceptional among British transports in having mid rather than high wing. It is now the principal aircraft employed as an airborne lifeboat carrier.

JULY 1, 1944  
FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-30  
NAVY DEPARTMENT BUAE 3

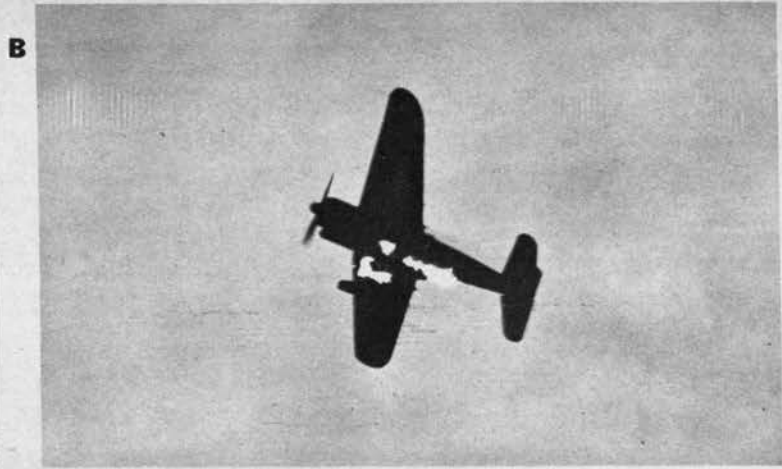
WARWICK



**SPAN:** 97 ft.  
**LENGTH:** 70 ft., 9 in.  
**APPROX. MAX. SPEED:** 244 m.p.h.; cruising, 208 m.p.h.  
**SERVICE CEILING:**

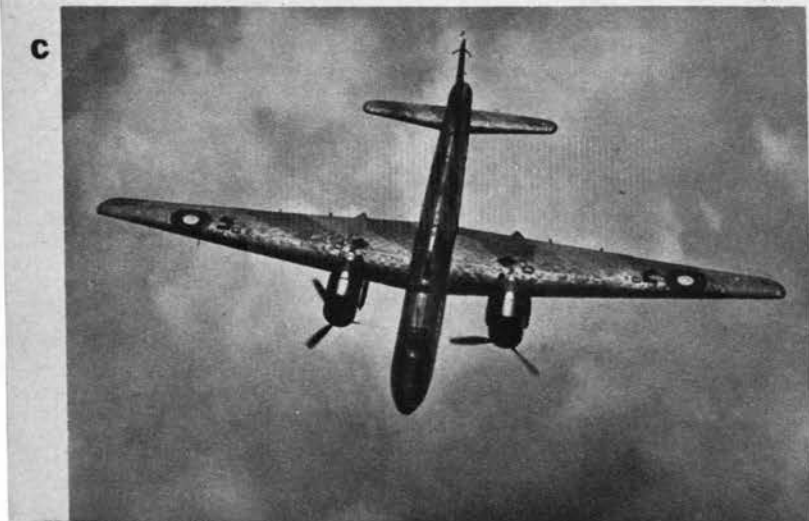
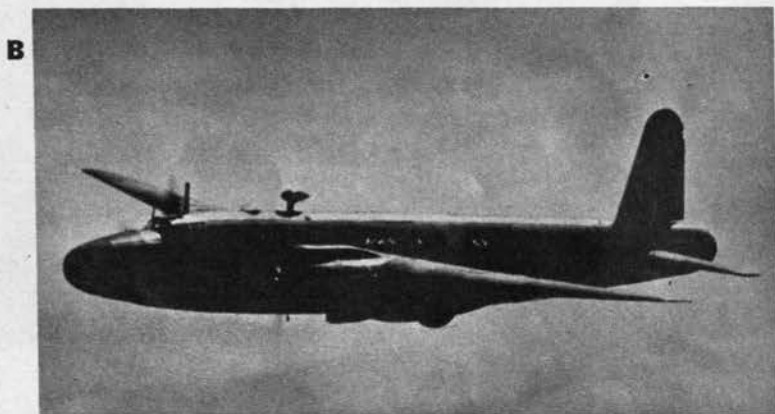
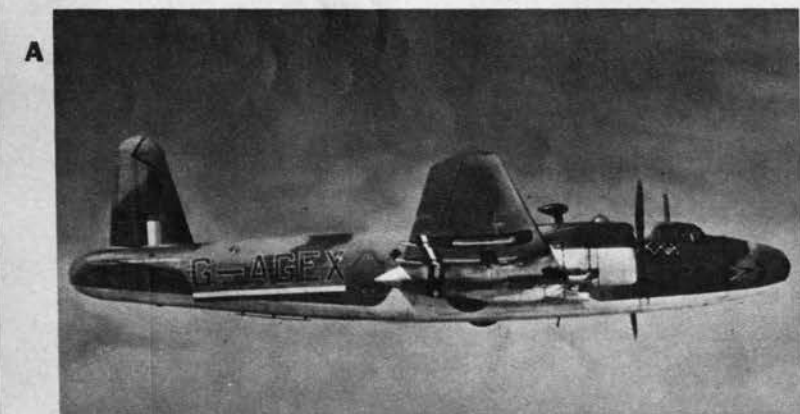
**RESTRICTED**





↑ **JILL**, a spectacular new Jap torpedo bomber, was photographed during the Marshalls operations. She was attacking a carrier when the ship's antiaircraft fire caught her and she plunged, burning, into the sea. Other Jills have been seen at Wotje and at Kwajalein.

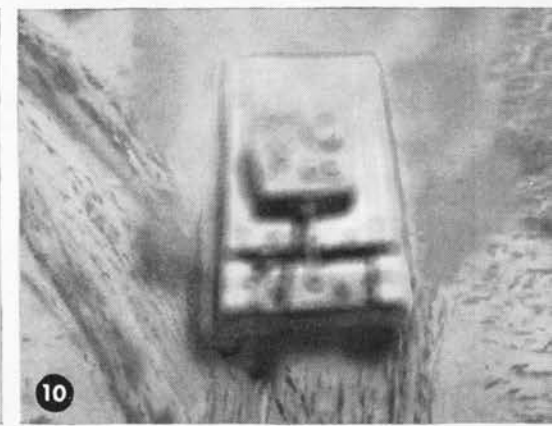
**WARWICK** is Great Britain's newest freight and passenger transport now operating in many theaters of war. It is a good example of Anglo-American co-operation, combining a typically English airframe with two U. S.-built Pratt & Whitney Double Wasp engines. ↓





# QUIZ NO. 4: ARMORED FORCE IN EUROPE

(For answers see p. 48)





# QUIZ NO. 5: FIRST & SECOND LINE TYPES



1



2



3



4



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